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JULY-1947



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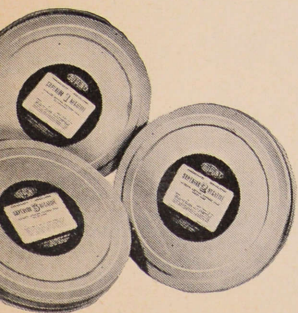
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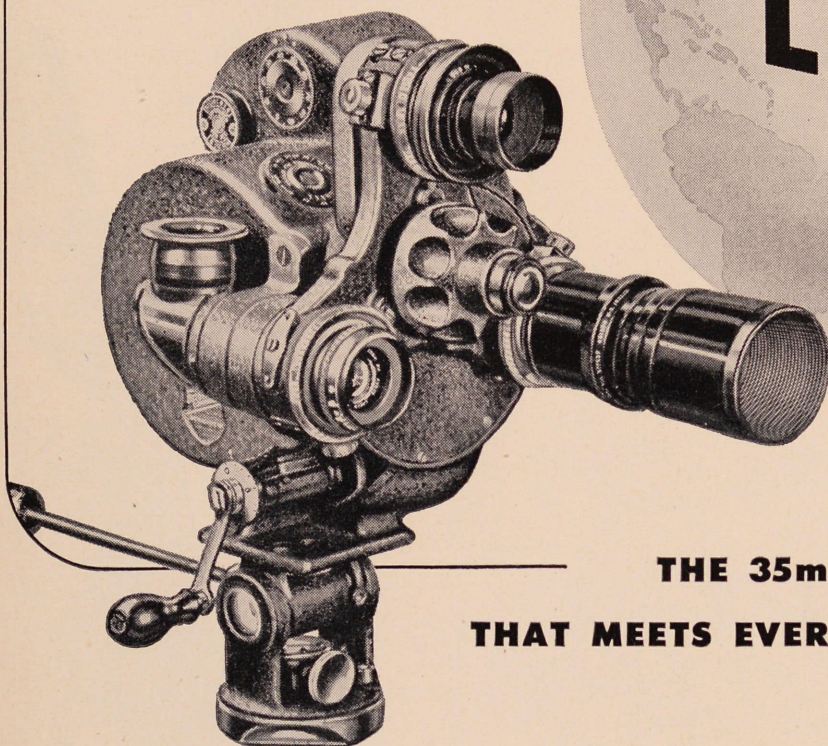
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AMERICAN CINEMATOGRAPHER

THE MOTION PICTURE CAMERA MAGAZINE

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ON THE FRONT COVER—Ginger Rogers on the set of Columbia's production, "It Had To Be You." Producer and co-director Don Hartman is on the left; co-director Rudy Mate, A.S.C., is in right foreground; while Director of Photography Vincent Farrar, A.S.C. is looking over the star's shoulder. Production marks initial directorial assignment for Mate, long a top-ranking Director of Photography.



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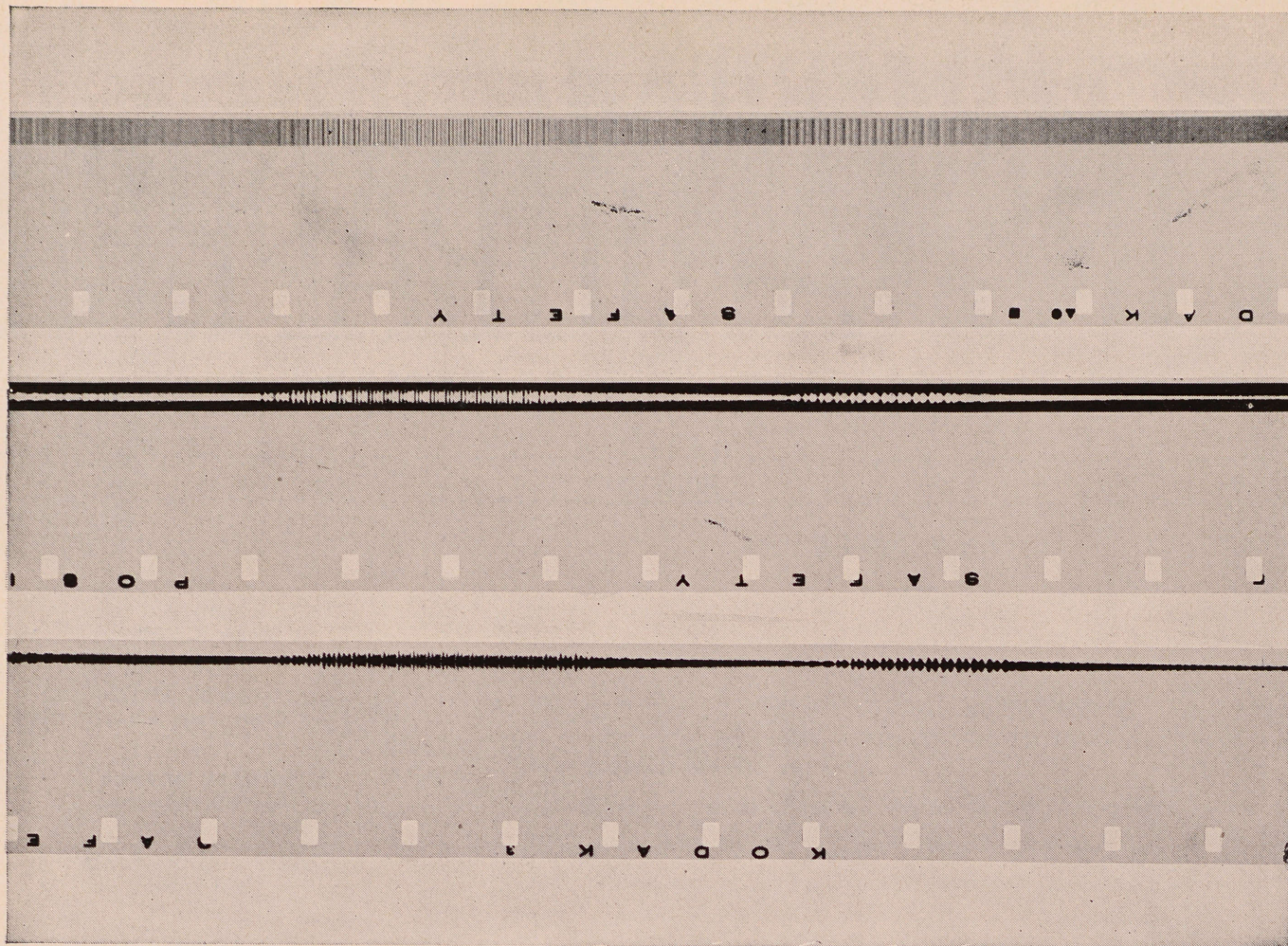
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HISTORICAL DEVELOPMENT OF SOUND FILMS

By Earl I. Sponable

(Twentieth Century-Fox Film Corp., New York)

PART 1.

(This most informative paper was presented by the author at the October, 1946, convention of the Society of Motion Picture Engineers in Hollywood; and published in the April, 1947, issue of the SMPE Journal. It is reprinted through permission of the SMPE, and, because of extended length, will be presented in three or more parts.)

Introduction

IN THIS introduction I should like to set down the purpose of this paper, to say something about the way in which I propose to treat the subject matter contained therein, and perhaps even to make a few personal remarks.

First, the purpose. There have been various documents published relating to the history of sound recording on film, but they have not been complete, nor have they, in most instances, attempted to rate the relative value of the contribution made by the various inventors. Since I am somewhat in the same position as the famous chemist Berthelot, who was declared to have been the last one who would know the whole of chemistry, I propose to undertake to arrange the technical contributions leading up to the commercialization of sound motion pictures in chronological order, and to attempt this evaluation. Perhaps I may be forgiven for this apparently egotistical point of view, because I was fortunate to have participated in bringing about the commercial development of sound motion pictures; and for at least a short period of time I was probably the only individual who had heard practically every sound record and knew intimately those engaged in making them. Late in 1926 I was, like Berthelot, overcome by a feeling of helpless futility; it was then that the art began such rapid expansion that I could no longer keep up with the tremendously increased number of sound records.

In dealing with this development, I shall more particularly restrict my remarks to the photographic methods of sound recording and shall list in considerable detail the steps taken in the development of the Fox-Case system. The section of this paper which deals with the work of Theodore W. Case contains abstracts from correspondence which he kindly made available to me, and from the notes of the Case Research Labora-

tory, which he organized shortly after I joined him in 1916; I therefore know, of my own knowledge, that these notes were kept with a high degree of accuracy and detail, and are correct. I have quoted directly from these records in some instances, since they are available to the future historian—the original Case Laboratories having been made a museum in the city of Auburn, New York (now known as the Cayuga Museum of History and Art).

The remaining parts of the paper, dealing with the work of others, may have been treated in somewhat less detail: first, because much has already been written regarding their work and it seems unnecessary to repeat it here (except to the extent required for a clear chronological development of the subject), and, second, because I was more directly and intimately concerned with the work of Mr. Case.

To the uninitiated, this account may prove dry reading at best; it is intended to do no more than appeal to those having a substantial interest in, and present knowledge of, the art. If it enables those now devoting their time and energy to the perfection of sound pictures to see something of the stages by which we arrived at our present state, it will have served its purpose.

Part 1. Early Steps in the History of Sound Recording

1857: Leon Scott patented in France what seems to be the first method of recording sound. This disclosure shows the use of a stylus connected to a membrane through a series of levers and a method of tracing figures corresponding to speech, song, etc. on paper covered with lampblack. The paper was attached to a cylindrical drum, which could be rotated by hand and moved forward by a screw. He called the instrument the "phonautograph."

1862: Another example of early interest concerning the nature of sound is found in the work of one Doctor Jan N. Czarmak of Vienna, who succeeded in photographing the vocal chords in action.

1877: Thomas Edison brought out his epoch-making invention, the first phonograph. It was similar in principle to the phonautograph but differed in that he used tinfoil on the cylinder and had his stylus attached directly to the vibrating diaphragm. In his later models, wax was used as the recording medium.

1878: Professor E. W. Blake, of Brown University, published a paper on "A Method of Recording Articulate Sounds by Means of Photography." This describes a mirror actuated by a microphone and the moving of a beam of light over a photographic plate.

1880: A. G. Bell patented the method of using selenium for detecting sound signals sent over a modulated light beam. The experiments in light telephony leading up to this patent were carried on in 1879.

1880: Charles E. Fritts filed a patent application in the United States entitled "Recording and Reproduction of Pulsations or Variations in Sounds and other Phenomena." This application is remarkable in its completeness, broad scope, and length of time in the patent office. As finally granted, on Oct. 31, 1916, it covered 26 pages and had 96 claims. It is doubtful if Fritts did anything practical; he confined himself to putting down a large number of ideas and variations on paper. Claim 84 of his patent reads "The method of making a sound record which consists in photographically affecting a sensitive surface in accordance with sound waves."

1886: A. G. Bell, C. A. Bell, and S. Tainter patented both a variable-area and variable-density method of recording a sound modulated light beam through a small slit upon a photographic film. Both a physical slit and optical slit are disclosed.

This seems to me to be an important patent that has heretofore been overlooked. It clearly anticipates Ries, as may be seen from the following quotation: "According to the record part of the invention a variable beam of light is caused to pass through a fine slit or other opening, and an image of the slit enlarged, diminished, or of the same size is then projected, by means of one or more lenses or other suitable devices upon a sensitized tablet which is moved progressively in front of the slit"; and "Sometimes it is desirable to use a second slit close to the recording tablet."

1887: The work of Hedrick, a Dutch inventor, using flames that could be varied by sound waves, should be noted.

1887: C. J. Hohenstein patented a more sensitive method of recording a sound modulated light beam "by reflecting light from a small pivoted mirror several times, focusing beam of last reflector, which is parabolic, upon a photographic film." This is quite similar to the optics of the recording system later developed by General Electric.

1892: Demeny's "Chronophotophone" combined a disk phonograph and a magic lantern arranged with slides.

1894: Edison brought out the "Kinetoscope." This was peep-show device using ear tubes to catch the sound, and rather crudely brought about synchronization of sound and picture.

1900: J. Poliakoff filed a patent application on the focusing of a light beam upon a photoelectric cell, through a posi-

(Continued on Page 246)

TWO WORLDS IN TECHNICOLOR

By Herb A. Lightman

ALL TOO RARELY it is the privilege of the moviegoer to view a film which smoothly blends the ultimate in entertainment value with a near-perfect display of cinema technique. Falling neatly into just that category is "Stairway to Heaven," a J. Arthur Rank presentation filmed in England, and currently being released in the United States by Universal-International.

That this motion picture represents Britain's finest cinematic achievement to date is attested by the fact that it was selected from a long list of candidates for showing (under the title: "A Matter of Life and Death") at the recent Royal Command Performance held at London's Empire Theatre.

To the layman, "Stairway to Heaven" represents superb screen fare, a delightful fantasy of mixed humor and poetry, handsomely mounted and frankly slanted to captivate the American film audience. To the critic, the film is an adventure in spectacular camera treatment, a project of such vast scope that it richly merits the adjectives "stupendous" and "colossal" which have been so promiscuously

wasted on less worthy efforts. It applies Technicolor to a series of striking, perfectly-executed special effects with a smoothness seldom before achieved on the screen. It makes effective use of the tricky dye-monochrome process — and, most important, it manages at the same time to be an *audience* picture and a *critic's* picture.

Air-borne Fantasy

"Stairway to Heaven" was jointly written, produced and directed by Michael Powell and Emeric Pressburger who have previously brought to the screen such quality efforts as "The Invaders" and "Colonel Blimp." Briefly, it is the story of an R.A.F. pilot caught in his burning plane without a parachute, who, in what he believes to be his last living moments, falls in love with the voice of an American WAC on duty as radio operator back at the air-base.

As he bails out, the scene shifts to that quarter of heaven where good pilots go when they die, and where the doomed pilot is momentarily expected. Great consternation develops behind the pearly gates when he fails to make his sched-

uled appearance. "Conductor 71," a celestial messenger who lost his head in the French Revolution, and who had been assigned the task of escorting the flier to the heavenly portal, explains that he let his charge slip away from him in the pea-soup English fog. He is sent back to rectify his error only to find that in the interval the flier, still very much alive, has met the WAC radio operator and fallen for her with a fervor that makes the promised joys of the happy hunting ground seem tasteless by comparison.

Working on the theory that "Heaven can wait," he refuses to don wings—and from that point on, the film narrative becomes a spirited tug-of-war between the forces of heaven and earth for possession of the flier's soul, culminating in a spectacular heavenly trial sequence in which a "cast of thousands" actually makes its appearance. Needless to say, in the final scene love conquers all, and the audience leaves the theatre feeling that it has seen a corking good picture.

In the presentation of the *heaven* and *earth* locales, normal Technicolor is used to portray the *earth* sequences, whereas the scenes in *heaven* appear in black and white photography. The transitions between color and monochrome scenes are so smooth that there is no apparent mechanical device involved. The black and white image merely seems to take on color bit by bit as the action progresses.

Actually, the effect was achieved by means of the dye-monochrome process, which is not in itself new but which has never before been used with such flawless skill. Any reproduction of a black and white photograph in a Technicolor picture is a dye-monochrome reproduction of the neutral original, the neutral effect being obtained by identical printings of the three reproduction colors used in the Technicolor process.

For the scenes to be photographed in dye-monochrome, a black and white negative was photographed, and from this



Left: A scene from the J. Arthur Rank British production, "Stairway to Heaven," currently being released in the United States by Universal-International. The scene pictured is the check-out room for wings in the aviators' division of heaven—a locale which figures prominently in the film. Right: A climactic scene from "Stairway to Heaven," showing the huge 260-ft. escalator from which the film draws its name. The stairway took three months to construct, and is considered the most expensive motion picture prop ever built.



Left: A scene from "Stairway to Heaven" showing a gallery overlooking the immense records department where heavenly souls are recorded. The "heaven" sequences are printed in black and white by means of the dye-monochrome process, while the "earth" sequences appear in rich full Technicolor. Center: A scene from the celestial trial sequence indicating the forceful wide-angle effects achieved in the film. Right: A scene showing representatives of "the other world" descending to view life on earth. "Stairway to Heaven" was selected from a list of outstanding films to be shown at the Royal Command Performance in London.

three identical negatives were made which were used as if they were separation negatives. The transition effects from black and white to color were actually long dissolves "sync'd" to the exact frame, so that there was absolutely no jump in action. The most unusual aspect of the effect is that, although the sets were lighted for color, the black and white reproductions of these scenes maintain a smooth velvety quality devoid of the flatness one might expect.

The Camera Scores

Although "Stairway to Heaven" ranks high in every department, it is the smooth and original Technicolor photography of Jack Cardiff, A.S.C., F.R.P.S., that is the film's most spectacular asset. Cardiff's boldly experimental camera is a striking complement to the story's fantastic theme. His use of colored light effectively points up the more dramatic episodes, especially the opening sequence which cuts back and forth from the blazing plane to the tense radio control room at the air base. Throughout the film, and especially in the "heaven" sequences, wide-angle lenses are skillfully used to create dramatic composition. The camera moves freely and unobtrusively, establishing an aura of spaciousness accurately in key with the celestial settings.

Mood, also, figures prominently in the camera treatments designed for "Stairway to Heaven." The sequence, for example, in which the flier is discovered floating unconscious in the sea following his parachuteless jump, was filmed in the early morning with the faint, somewhat eerie, glow of sunrise suffusing the scene. Following the pilot's progress as he struggles ashore, the cinematographer chose a high angle which accentuated the barren vastness of the beach, shooting against the sun to capture the curious effect of backlighting on the water. The entire sequence has a strange, unearthly feeling to it that leaves the audience in

suspense for the moment, wondering if the flier has arrived at heaven, earth, or some weird half-world between the two.

Never consciously "arty," the camera takes full advantage of the scope offered by a theme based on fantasy. In an operating room sequence, for instance, an angle is adopted which is unquestionably the ultimate in *subjective* approach. After conventional establishing shots of the patient on the operating table, the camera takes up a vantage point presumably inside his cranium, and we find ourselves looking out through his eye (with the eyelids and lashes clearly framing the scene) as he stares up at the ceiling. As an anaesthetic is administered, he closes his eye, and the lids slowly come together, blotting out the scene in a dissolve to masses of red and blue specks on a gray field, symbolic of the sensations of a man losing consciousness. In any other film, this would seem a grossly far-fetched effect—but in "Stairway to Heaven" it fits in quite naturally and does much to add punch to the sequence.

Designed for Camera

"Stairway to Heaven" represents an achievement in cinematic design in that it casts aside many of the conventions of architectural planning in favor of settings specifically designed for the camera lens. Production designer Alfred Junge visualized the "other world" sets through the eyes of a man who was both poet and flier. These sets have a definite sweep, a modern, clean-cut elegance that seems quite appropriate to a repository for the sky-soaring souls of airmen. The settings have a vastness that seems to melt into space at the edges, so that one can readily imagine an ethereal domain beyond the heavier atmosphere of the Universe.

Sets for the heaven sequences include a massive escalator, a vast amphitheatre, a huge records department a check and

issue room for wings, plus giant statues of such immortals as Socrates, Lincoln, and Beethoven. Designs involved the making of 46 detailed set sketches, 24 complete series of architectural plans, and several large scale models. Designs for the earth sets placed emphasis on a kind of colorful realism, forming an effective contrast with the pearly monotone of the heaven sequences.

Two of the most spectacular sets ever filmed are the stairway itself, a gigantic escalator supposedly reaching from earth to heaven, and the huge amphitheatre where the flier pleads his case before a heavenly tribunal.

The oversized escalator, believed to be the most expensive mechanical film prop ever built, weighed 85 tons and had 266 20-foot steps. A crew of engineers worked for three months on round-the-clock shifts to construct it.

The picture opens with the camera soaring through an elaborately authentic three-dimensional scale model of the Universe. Planets are seen revolving in their orbits; the Milky Way goes by like a cloud of twinkling sequins; a *nova* explodes into a miniature inferno; and the stars glow and twinkle in a way that would seem quite real to anyone seated on a meteor far out in the reaches of space.

Magic in the Lens

Great credit is due technicians Douglas Woolsey, Henry Harris, and Technicolor, Ltd. for the smooth special effects that add so much to the film. Never has this reviewer seen such perfection of mechanics in the execution of traveling matte shots and double printing. *Dissolves* from color to monotone, as well as from full sets to miniatures are so smooth that it is difficult to tell where one scene ends and the other begins.

One of the most novel sequences in the picture involves the use of a fascinating

(Continued on Page 263)



25 YEARS OF THE "LUBITSCH TOUCH" IN HOLLYWOOD

By Mollie Merrick

WHEREVER camera entertainment is discussed, the name Ernst Lubitsch is magic. Lubitsch in his twenty-five years of picture making in America, has become a unique figure whose talents merit the tag "genius."

His distinctive approach to a subject has been labelled "the Lubitsch touch" by critics seeking to identify its individuality and dignify it with a modicum of isolation.

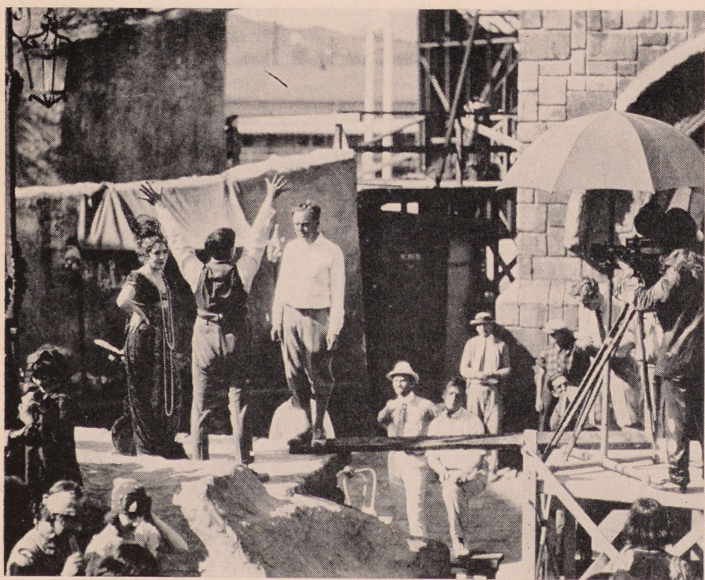
Lubitsch has, beyond all this, an infallible wit and freshness in story treatment that remain undimmed from much usage.

This Viennese who many years back became an American citizen, actually has been working with cameras for thirty-five years. He began directing in Europe in 1912. Now, at 20th Century-Fox he is preparing his twenty-sixth film adventure, "The Lady in Ermine." Twenty-five successful movies represent his work in this country—one for each year, although they were not made in that precise fashion. Some years Lubitsch completed three, four, or even five movies. Again one or two films seemed sufficient. And during the period when he took over the production destinies of

Paramount, the record is blank so far as directing is concerned.

"Lady in Ermine" deals in fantasy to a considerable extent. In it there are ghosts—ancestors who come to life at midnight, assuming very corporeal identity. It was discussion of these ghosts which brought out Mr. Lubitsch's most interesting theories on the relationship of cameraman and director.

The Lubitsch workshop at 20th is a huge square room with Adam green walls, some modern black and whites in natural wood frames, a grand piano wedged into one corner, its nose to the wall, deep leather furniture and a satis-



A quarter of a century ago, Ernst Lubitsch, after brilliant accomplishments in Europe, directed his first production in Hollywood—Mary Pickford in "Rosita." Left: Lubitsch, with upraised arms, explains a scene to Miss Pickford and Director of Cinematography Charles Rosher, A.S.C. Right: Lubitsch perches on a ladder behind the cameras to line up a crowd shot, with Miss Pickford in right foreground. Paul Perry, A.S.C., and Rosher are at the cameras.

fying sense of light and space. Preparation of a story and cutting of the finished picture, always take the largest amount of this producer's time. When his picture goes before the cameras Lubitsch knows to a nicety what he wants. Actually he has cut it in his mind so there is little time lost, practically no waste footage, and a minimum of frustrations and futilities.

As a director Lubitsch dislikes a cold script. He works with the writer from the inception of the idea, knows the story more completely than anyone else involved, works out dialogue, situations and dramatic angles with the scenarist. In the case of "The Lady in Ermine," the scenarist happens to be Samuel Raphaelson, a playwright and author who has collaborated many times, and most happily, with Lubitsch. I already knew Lubitsch's attitude towards the writer, so I inquired about the cameraman and where he fits into the Lubitsch program:

"It is most important in making a picture," said Lubitsch, "to have closest cooperation between cameraman and director."

"The director must know what effects he wants to achieve with the camera. But after he has explained this to the cameraman and considered his side of it, he must be satisfied to allow the cameraman to get his effects himself.

You see, a director doesn't want the cameraman to assume the prerogative of direction. So in the same spirit, he should recognize the fact that a cameraman can't function to the best of his ability if the director is trying to control the cameras completely. A wise director will listen to whatever ideas his cameraman may have, even if eventually they do not prove to be feasible. But by listening to the cameraman's ideas, a satisfactory rapport is established between two workmen who have the fate of the picture in their hands.

"In telling his story I feel it is most important for the director to value the camera's part. A director should make it his business to learn just what camera scope is—he should know to a nicety just what can be achieved with the camera. I think too many directors know all too little about this most important angle of movie making.

"The camera, to my mind, has been greatly misused in regard to moving shots. The moving shot is only good if you are not conscious of mechanical movement, just as a comedian is funny only when he doesn't convey the idea he is trying to be funny.

"Unfortunately we have neglected the camera greatly in the last few years. We have failed to tell the story in visual terms. Naturally the spoken word is a terrific asset and carries great power; but we have become so engrossed in words we have neglected to take full advantage of the dramatic power of the visual approach. In my next picture I hope we will have a chance to give more space again to visual effects. I hope to take full advantage of dialogue and

speech, but also I'd like to give enough room for the valuable things we learned and have partly forgotten from the silent days of the motion picture."

At this point in our talk we discussed fantasy—usually a problem on the screen.

"It should not be handled with camera tricks," said Lubitsch decisively. "Fantasy can never be put over that way. My ghosts will be very corporeal people who will move and talk and react just like other actors in the picture. Metro-Goldwyn-Mayer had a story of a ghost—"A Guy Called Joe" was its title and it was a box-office hit—where the ghost was the very substantial Spencer Tracy. You see when you deal with the fourth-dimensional thing you can't afford to run the risk of not getting through to the hearts and imaginations of your audience. If you seek to emphasize your story situation with trickery, you fail because you cannot achieve a dynamic effect in a picture if you let your audi-

ence become conscious of the mechanism behind motion picture making."

Lubitsch has no hard-and-fast rules about fading, cutting, effecting transitions in time and place or emotional content; beyond that one fundamental admonition not to let the audience become conscious of mechanics.

The problem of arriving at a decision as to whether the flow is to be a gentle sostenuto or a staccato one, whether change is to be made through a leisurely fade or a quick ruthless cut, whether the audience will react as you desire if given a brisk jolt, becomes purely a thing of instinct with the director. This, without question, is the part of moviemaking that cannot be taught since no two situations are precisely alike. This is something which calls for a subtle sixth sense, possession of which differentiates the artist from the merely good craftsman. If the need for such decision did not arise, the making of a picture might well

(Continued on Page 258)



Ernst Lubitsch, producer-director on the Twentieth Century-Fox production, "Cluny Brown," rehearses a scene with Jennifer Jones and Charles Boyer.

FLASHTUBES

The Newest Light In Photography

BY D. W. PRIDEAUX

(Lamp Department, General Electric Co., Los Angeles)

FLASHTUBES, the newest thing in photographic light sources, can produce an amazing quantity of light in a brilliant flash of good daylight color. Flash duration can be extremely brief at reasonable light output values, freezing high speed motion, or somewhat longer flashes are possible at larger values of output. Present flashtubes have been flashed at low loadings with such rapidity as to appear to be a constant source of light.

It is reasonable to expect new developments and improvements in flashtubes as a result of continued laboratory research. As each of the now familiar light sources emerged from the laboratories, they have been studied as a possible source for motion picture set lighting. Incandescent lamps have been eminently successful. The 1, 2, and 5 Kw's are part of almost all sets, while the more recent reflector type—such as the reflector photospots and floods—are finding new applications.

The mercury lamps originally used by the industry in the form known as the Cooper-Hewitt mercury tube, has undergone development, being currently available in several wattages, including a small but high power, high efficiency mercury arc known as the A-H6. These sources have been studied, but as yet, found wanting since the mercury spectrum is not continuous.

It is one which emits energy in definite bands of light in the yellow-green, green, blue, and violet portions of the visible spectrum. Additional development work on mercury arcs is in progress, and out of this work may come a new source of improved color quality and high efficiency. Sufficient progress to prove of great interest to the motion picture industry has yet, however, to be made.

With the advent of fluorescent lamps, daylight color became available at much higher efficiencies than could be obtained by the use of filament lamps and filters. The characteristics of the fluores-

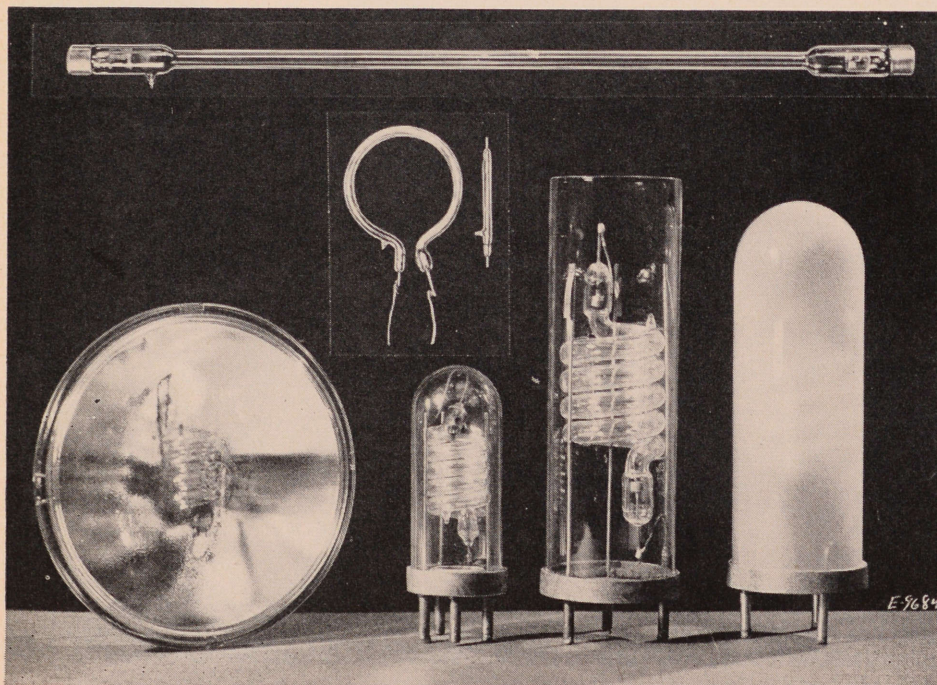
cent lamp, such as the difficulty of DC operation and the large area of the light source, resulting in soft diffused illumination, proved it limited in its application to motion picture set lighting.

The flashtube which, in a sense, is an offspring of the condenser spark discharge in open air, is a much more concentrated source than fluorescent. It was used to a rather small degree in pre-war still and trick photography. During the war, some 27 types of flashtubes were developed and used for military purposes. The flashtube is essentially a glass tube, $\frac{1}{4}$ " to $\frac{3}{8}$ " in diameter, of various lengths, with an electrode sealed in at either end, and filled with xenon, krypton, hydrogen, mercury, or some combination of such gases. Figures 1 and 2 illustrate a few types of flashtubes which are currently available.

Light from a flashtube is the result of the discharge of an electrician condenser through the tube. This means a power source is necessary which consists basically of a high voltage transformer, a rectifying tube, and a condenser and a triggering device, all suitably connected. The transformer has a secondary voltage of one to several thousand volts. The capacity of the condenser is dictated by the flashtube and the amount of light desired. This capacitor is connected across the flashtube which is triggered, or set off, by an impulse from an ionizing or triggering coil. This triggering lead usually is merely a wire wrapped around the flashtube at one or more points. Refinements of this circuit are desirable, but the basic elements are as described. Figure 3 shows a schematic diagram of the circuit described.

The light output of flashtubes is increased by increasing either the voltage at which the capacitor is charged, or its capacity. An increased voltage for a given capacitance results in a considerable increase in peak lumens, but does not prolong the flash appreciably. An increase in capacitor size produces, at the same voltage, a higher peak in light output but also considerably prolongs the flash. Other characteristics of the discharge circuit can affect the flash duration. Figure 4 shows characteristic curves of a small flashtube under specified conditions. The effective flash duration ranges from around 1/50 of a second for a tube fired on 4000 volts and 4500 microfarads to 1/30,000 of a second for a tube fired on 2000 volts and 2 microfarads.

The energy input to a given tube is limited for a single flash by the limitations of tube materials and upon the number of flashes expected from the tube. A flashtube made of hard glass, when overloaded, develops a crazing which weakens the tube and may ultimately develop into an air leak. A quartz tube, on the other hand, will stand considerably higher loadings, but an overload may show a white deposit or crack, presumably due to the sputtering of material from the electrodes. At suitable



Figures 1 and 2, illustrating a few of the several types of Flashtubes currently available.

loadings the life of the tubes is indefinite, being at least thousands of flashes.

One of the principal characteristics of flashtubes for still photography is its ability to stop or freeze high speed motion. Many unusual photographs have been taken which illustrate this characteristic. The speed of the flash is sufficient to "freeze" the flight of a bullet, the head of a golf club at midpoint of its swing, the shattering of a vacuum lamp bulb, or the flight of an arrow. In portrait work this characteristic is desirable since it catches expressions otherwise lost.

Figure 4 is a single frame from a strip of motion picture film showing a girl jumping rope, taken with constant incandescent illumination from a photoflood lamp. The motion of the rope is apparent by the blur recorded at the top of the picture. Figure 5 is of the same subject when illuminated by the use of flashtubes, in which case the rope is "stopped" by the brief flash duration.

For motion picture work, such flashtubes would be flashed in synchronism

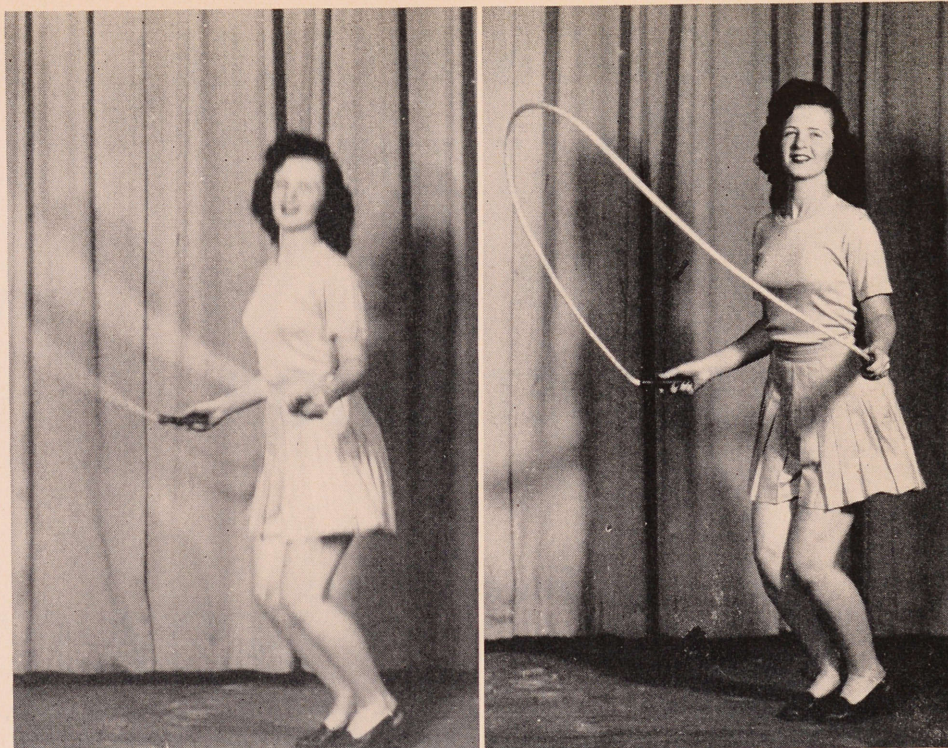


Figure 4 (left): Photograph taken from a strip of motion picture film, with illumination from photoflood lamps. Figure 5 (right): Single frame of motion picture film—taken with the subject illuminated by two flashtubes. Note that the motion is effectively stopped.

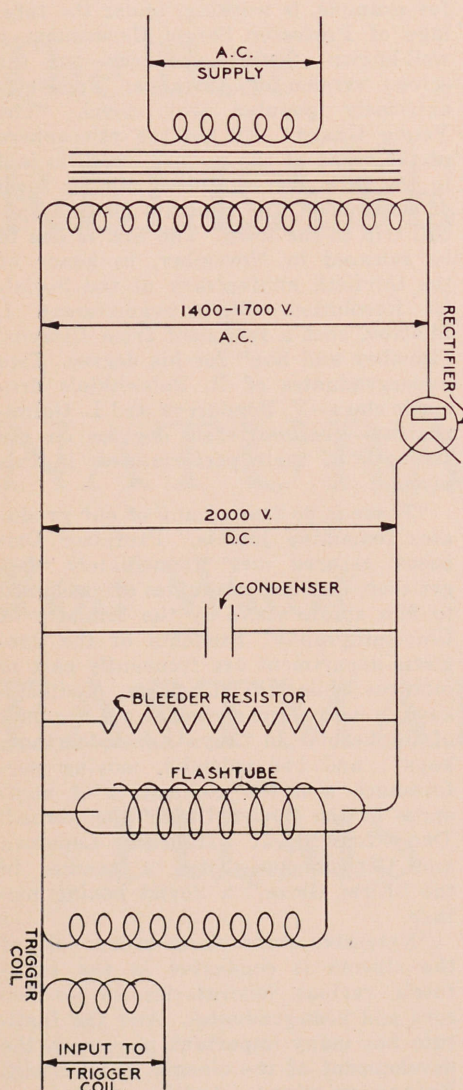


Figure 3. A schematic wiring diagram showing the bare essentials of a circuit for firing a pre-ionizing type of Flashtube.

with and during the open portion of the shutter cycle. The psychological effect of the flicker of such a flashlight light on actors requires further study. If the lights flash only once for each picture frame, and is 24 times per second, the flicker is very noticeable. It is possible, however, to increase the flashing rate to 48 times per second, in which case one flash would be utilized in recording a picture, and the other thrown away by occurring during the time the shutter is closed. Such flashing operation is more acceptable psychologically. Further increasing of the flashing rate to 72 times per second means that two flashes may be utilized and the third, in effect, thrown away. Negligible flicker is observed with such a flashing rate. Similarly, 96 flashes per second would presumably use two flashes and discard two flashes. Ninety-six flashes per second would seem to be quite acceptable from the actors' viewpoint.

The addition of a certain amount of constant illumination would materially lessen the objection to the flashing light source. The efficiency of systems which theoretically could be worked out with such flashing sources and constant illumination would mean less energy consumed, hence less heat on the set. The efficiency of the flashtube itself is good, ranging to 50 lumens per watt, depending upon the loading. A further gain in efficiency from the energy used in the flashtube would be realized because the daylight color of this light would mean less energy absorbed in filters for further color correction. Xenon-filled flashtubes are close to 7000 degrees Kelvin on the color scale.

Some of the less desirable characteristics of flashtubes, such as the high cost of the power pack, the effect of transient currents on sound pick up systems, and the noise which the tube itself emits because of the arc discharge, would definitely have to be studied and overcome before this source would be suitable for motion picture work. Then, too, at the present the tube types which are essentially the military types developed for specific purposes, are not suitable for repetitive flashing at the desired high energy inputs. It seems possible, however, that such tubes could be designed, probably with some provisions being made for cooling.

The projected result as seen on the screen, resulting from the use of a combination of constant illumination and flashtubes on the set, is an unknown quantity. It does not seem suitable for scenes where high speed action takes place since a certain amount of actual blur on the film apparently conveys a better impression of motion. When normal motion on the set occurs, it is a question as to whether or not there would be any appreciable change in the results as compared to those of accepted constant light sources. If there is a noticeable difference, only tests will show whether or not it is desirable.

For a more complete technical discussion of flashtubes, the reader is referred to a paper presented to the Society of Motion Picture Engineers by Mr. Frank E. Carlson, which the author understands is to be published in the near future in the SMPE Journal. The author is indebted to Mr. Carlson for much of the above information.

MOTION PICTURE INSTITUTE IN THE SOVIET UNION

By Suzanne Ross

(Editor's Note: The Article below is an official release of the Soviet Government. It was delivered directly to us from Moscow, and we are unable to obtain any information on the author, Suzanne Ross. The entire article is printed as received.)

RISING abruptly out of a stretch of open country, on the outskirts of Moscow, is the modern, streamlined building of a college that is unique in the world. Its full name is the State Institute of Cinematography and it turns out professionals in all fields of cinema art, from scenario writer to cameraman, from movie actor to costume designer.

"Today, when our Institute marks its 25th anniversary," Prof. P. P. Dribasov, the Principal of the State Institute of Cinematography told me, "I am glad to say that it enjoys prestige as an institution which has played an extremely important role in setting high artistic standards in Soviet motion picture production and in giving to the Soviet film world some of its finest personalities."

The Institute of Cinematography was born of the firm conviction that if the cinema is to survive as a vital art, stimulating to the minds of the people, and deeply concerned with the major social problems of the time it must have highly educated, broad-minded people to guide its destinies.

"A pioneer in the field, the Soviet Institute of Cinematography had no model to follow and work from," Prof. Dribasov continued. "It elaborated its own academic programs and study courses, perfected and supplemented them from year to year. And throughout the 25 years of its existence it has been the chief source for supplying Soviet film studios with highly qualified professionals in all fields of cinema art. Among the Institute's famous graduates, to mention only a very few, are the directors V. Pudovkin, G. and S. Vasiliev, the actor B. Babochkin (known to Americans for his impersonation of the

hero in the Soviet film "Chapayev"), and cameraman Mark Troyanovsky.

"There are five principal departments in the Institute—dramatic, directing, scenario, photography, and scenic design. To enter any of these the prospective student must show aptitude and gift in his chosen field and pass a number of rigid tests. It is interesting to note that some 60% of this year's freshmen are young boys and girls from the various national republics of the Soviet Union: Georgia, Kazakhstan, Esthonia, Latvia and even far-off Yakutia. Upon graduation these young people will return to their respective republics to make native pictures.

"The college course is from four to five years," Prof. Dribasov went on to say, "and apart from the special subjects and a good deal of practical and experimental work; covers extensive study in the humanities and general art subjects."

Languages are also taught and as elsewhere the conversation circle flourishes. A few steps away from the principal's office I took a look at the wall-paper, ubiquitous in the Soviet Union, and was surprised to find the articles written in English, a somewhat dated and flowery English, though quite correct. It was the proud handiwork of the college's English conversation circle.

When the shrill ringing of a bell announced the recess period I hurried out into the hall, anxious to see the students. Unobtrusively, I made my way to a bevy of pretty coeds and found myself eagerly catching scraps of their conversation. They were discussing Jefferson and the impact of his statemanship on American history. Evidently, they had just come from a history lecture. What struck me was their simplicity and manner, the complete absence of collegiate affectation. Nor was there any pretense to glamour (after all they hoped to become movie stars!).

But for all their gravity, they were stunning girls with finely chiselled, ex-

pressive features and a beauty more than skin-deep. One of them, a tall, graceful Armenian, her head wound in coils of luxuriant, dark hair, said to me: "I dreamed of going into the movies ever since I was a little girl, and now I am getting the most thorough education I could hope for to prepare me for the career of actress and director as I am determined to be both."

Nearby, surrounded by a group of eager students, stood the girls' professor—Sergei Eisenstein, the world-famous director. He had not changed a bit since the last time I saw him—which was several years ago. There was the same affable manner, the same youthful ardour in the eyes which looked out from under a towering forehead. Eisenstein is not the only distinguished professor at the Institute. Practically all the leading Soviet regisseurs, actors, scenario writers, and scenic artists teach here.

"The Institute has its own film studio and there is every accommodation for making and releasing a picture," Professor Dribasov said. "Graduation classes and individual undergraduates collaborate on pictures for their degrees. One of this year's graduation classes, for example, is working, under the tutelage of Professor Sergei Gerasimov—a well-known Soviet producer—on the screen version of Alexander Fadeyev's extremely popular war novel, "The Young Guard." To get the atmosphere of the scene of the picture which is laid in the little war-shattered mining town of Krasnodon, the students made a special trip to the town. The film is due to be released in November, in honor of the thirtieth anniversary of the Socialist Revolution. Student-cameraman I. Shatrov, shot a fragment from Dickens' "Dombey and Son" for his degree. Two undergraduates of B. Babochkin's dramatic class—V. Bondareva and L. Galimzhabova—received their degrees on the strength of their performances in this picture.

"There is no fear of any of our graduates remaining jobless," Professor Dribasov assured me. "Immediately they get their degrees, graduates are assigned to film studio staffs by the Ministry of Cinematography. Students of the dramatic department are frequently cast in pictures while still at college. Vodinets-kaya, a second year student got the part of the heroine in "Zoya Kosmodemyanskaya"; and her splendid, moving performance won the admiration of audiences in the Soviet Union and abroad. Two fourth-year students—Lepatova and Gerasimova—scored a success in the "First Glove," a Soviet boxing picture.

"Extensive research in every field of the cinema is conducted in the Institute's various laboratories by professors and post-graduates. And the Institute has many important papers on the development of the cinema to its credit. Extra-curricular activities include—among other things—previews and discussions of new films, Soviet and foreign," P. P. Dribasov said in conclusion.

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13. Camera Tricks

By CHARLES LORING

*Reprinted
in May Apr 55
A.C.*

CAMERA TRICKS, as differentiated from *special effects*, are devices which are deliberately slanted to surprise, bewilder, or amuse the audience. When cleverly staged, they add zest to the motion picture story (especially if it is a comedy), and do much to project the mood of a film based on fantasy.

Whereas a good special effect creates an illusion of reality without letting the audience know of the deception, the camera *trick* makes no attempt to disguise itself. It is judged on the basis of its originality, appropriateness, and technical smoothness. An audience rather enjoys being tricked—but the trickery must be carried off with a professional finish or the whole effect will be cancelled out. At no time should the “wires behind the scenes” be allowed to show through and thus steal attention from the subject matter of the story.

Camera tricks require detailed pre-planning. Rather than being thrown indiscriminately into the script, they should be carefully slanted to gain a specific reaction from the audience. If a trick effect is important to the plot, the scenes which precede it should create a suitable build-up to that effect.

Before a particular trick is attempted, tests should be made and information assembled so that the mechanics of technique will be as nearly perfect as possible. Nothing is as distracting to an audience as a trick that doesn't quite come off.

We shall discuss some of the cinematic tricks which may be executed with standard camera equipment, and which are especially effective in lending a professional touch to the screen presentation.

Upside-down Filming

Upside-down filming, one of the oldest of all camera effects, has been used cleverly and clumsily ever since pictures first began to move on the screen—but it is still an effective device if correctly applied.

The basic mechanics are simple. A camera is mounted upside-down on a special tripod head bracket which may be adapted from the standard head with very little trouble. The scene is shot normally, and after the film has been processed, that scene is cut out and mounted right side-up. When it is projected, the action will seem to be going backwards.

The old *cliché* in the use of this effect (and one which is still good for a laugh in the usual sports film) is, of course, the shot of the diver who suddenly seems

to rear up out of the water and flip himself back onto the diving board. Variations of this trick have fine comic possibilities if specially tailored to fit the story.

Let us say, for instance, that you are making a commercial film for “Crunchies Breakfast Fodder” or some such nutritious concoction. You establish your hero eating his way through a mountain of the stuff, after which he goes out into the yard and, with one mighty leap, bounds to the top of a shed, fence, or other obstacle. Obviously, all that is required to produce this effect is to shoot an upside-down scene of the player jumping down from the height and walking backwards into the house.

The same device can be used as a short-cut to filming certain scenes which might otherwise be difficult to stage. For example, suppose that you wish to film a scene of an arrow flying squarely into the bull's-eye of a new target. Obviously, you would ruin a good many targets by trusting the average marksman's ability to center the arrow. Instead, you would mount your camera upside-down, place the arrow in the bull's-eye just as you want it, tie an invisible thread to the end of the arrow, and, (with the camera running) have someone off-screen suddenly jerk the arrow out of the target. When spliced into the film right side-up, the scene will tell the desired story.

Upside-down filming can also be used to shoot trick titles, such as those which appear to be washed up on shore by a wave, or which materialize out of a pile of children's blocks scattered about the screen.

Double Exposure

Double-exposing two or more scenes onto the same length of film is a trick widely used in professional filming which has a number of valuable applications.

In a film based on fantasy, dream sequences are often used to convey the hidden thoughts or emotions of a specific character. By double-exposing shots of that character over exaggerated scenes or situations, the idea of unreality can be brought home quite forcefully.

The mechanics of double-exposure are basically simple. The two separate scenes are planned out in advance so that their compositions will complement each other, rather than clash. The first scene is exposed and then the film is rewound (either in the camera or in a darkroom) after which the second scene is exposed

onto the same length of film. Careful exposure control must be maintained so that the two scenes will balance in density and quality.

To achieve the best effect, the principle scene of the two should be lighted so that it contains a relatively dark area where the superimposed image will be placed. The subordinate scene should be played against a completely black background, so that there will be no disturbing overlap of backgrounds.

If a *ghost image* effect is desired, the subordinate scene is under-exposed about a half stop so that it will appear rather transparent, and so that the setting of the principal scene will show through. This device can be used, not only to produce a ghost illusion, but to show a man talking to his own conscience, etc.

Double-exposing color film is relatively difficult, since it involves the problem of color-mixing—but white letters, given sufficient contrast to “burn through,” can be superimposed quite successfully over color backgrounds, thus providing attractive titles.

Because of the possibility of more precise control, *double-printing* is sometimes preferred to *double-exposure*. Instead of exposing both scenes on the same strip of film, they are exposed on separate lengths and then superimposed by printing at the laboratory. The principal advantage is that a greater degree of control can be exercised over balancing the separate scenes so that they have the same quality and density.

Start Vanishing Characters

✕ In a comedy or fantasy it is often an effective touch to have a character disappear right in the middle of the scene. This is done by stopping the camera in the midst of the action, allowing the actor to step out of the composition, and then starting the camera again.

Let us say, for example, that we have a sequence in which a magician is to make his assistant disappear. We would start the camera rolling on the scene, and at the instant that the magician waved his wand at the assistant we would stop the camera, the magician would “freeze” his motion and the assistant would step out of the composition. We would then start the camera again and the magician would continue his action. The effect on the screen would be that of the assistant disappearing as the magician waved his wand.

The device can also be used to make objects disappear one-by-one from the scene. To provide a passage of time transition, for instance, you might want to show various courses of a dinner disappearing one-by-one from their plates.

Needless to say, it is equally simple to produce the opposite effect, that of characters or props suddenly appearing in the midst of a scene. It is, of course, essential that you have the camera mounted on a rigid support before attempting this particular trick.

Fast and Slow Motion

A camera equipped with variable rates of filming speed can be used to create

many effective camera tricks. The basic theory involved is that the faster the scene is photographed (i.e.: the more exposures per second) the slower the action will seem when projected at normal speed. Conversely, the more slowly a scene is photographed, the faster the action will seem when projected.

Slow motion is especially effective when used to show the details of action which is normally rather quick. For this reason, it is often used in sports films to show the finer points of diving, skiing, etc. Whereas standard sound speed is 24 frames per second, a rate of 48, 64, or 128 frames per second will produce satisfactory slow motion effects depending upon the degree to which you want to slow down the action.

The device is often used for comic sequences, such as to show the actions of a drunken man or how normal action would appear to his eyes. It is also effective in dream sequences where it is necessary to exaggerate motion in order to convey the proper element of fantasy.

A more utilitarian use of slow motion is to smooth out roughness in scenes taken from automobiles or airplanes. It should be pointed out, however, that any action appearing in such scenes will also be slowed down—often to a ridiculous degree—so that its use should be carefully restricted to scenes which in themselves are static.

Fast motion is, of course, the direct opposite of *slow motion*, and it produced

by filming a scene at a rate of 8, 12, or 16 frames per second. It, also, can be used occasionally for comic effect. To burlesque the hustle-bustle of a New York subway, for example, you might show people rushing around and cramming each other into trains at a rate of 8 frames per second.

A more practical application of *fast motion*, however, is the speeding up of chase sequences which cannot safely be filmed at a maximum rate of movement. A car going around a mountain curve at 30 miles per hour is a hair-raising spectacle when shot at 8 or 12 frames per second.

Fast motion can also be used to get spectacular scenes of clouds scurrying across the sky.

Single Frame Photography

Single-frame photography provides a multitude of possibilities for trick or special effects. The mechanical requirements are not too complicated: namely, a camera with a single-frame lever, and a camera stand or support which is absolutely rigid.

By photographing action a single frame at a time you can telescope a long drawn-out process into a very short period of time. If, for example, you shake up a bottle containing a mixture of water and oil, and you photograph it at the rate of 1 exposure per second, the separation of those two liquids (a process that normally takes several minutes) can be shown in a relatively short time.

Similarly, by exposing a frame at a time during predetermined intervals, you can make a flower appear to unfold quite rapidly, or a plant suddenly shoot up from a tiny sprout in the ground. Two conditions are necessary to accomplish this effect. Firstly, a perfectly rigid camera support must be arranged so that there is absolutely no vibration from frame to frame. Secondly, the light source must be absolutely constant, which means that artificial light, closely controlled by voltage regulation, will give the best results.

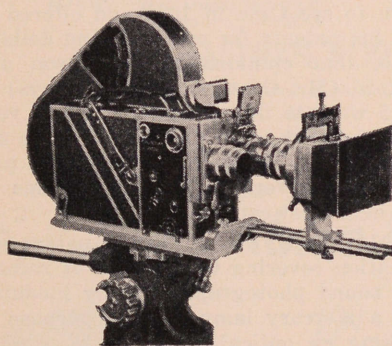
Cartoon and figure animation can also be filmed by means of single frame photography. In the case of cartoons, a series of drawings are made to cover a complete action. Each drawing is just a bit different from the other, and they are filmed in continuous order, one frame at a time.

In the case of figure animation, little dolls or puppets or even scientific models are moved a very small distance for each frame, so that, viewed at standard projection speed, they will seem to move quite naturally.

Speaking generally, camera tricks should be carefully plotted and written into the script before a camera turns on the production. Their success will depend upon how appropriate they are to the situation, as well as upon how smoothly they are executed.

NEXT ISSUE: Screen Make-up.

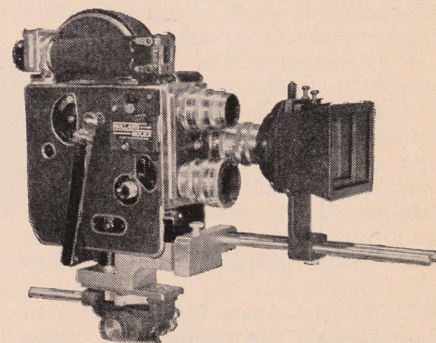
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Historical Development Of Sound Films

(Continued from Page 235)

tive photographic sound record moving uniformly across the beam, the photoelectric cell being connected to a telephone circuit. This disclosure is interesting in that it mentions the first use of a positive record and also a photoelectric cell for reproducing.

1901: Ernst Ruhmer began publication of his work on sound recording. Since he was a professor, his interest was more academic than commercial. He devised the "photographophon," an instrument something like the sound camera of today. With this he recorded and reproduced speech using arc lights and Gehrke tubes as light sources, and selenium cells in reproducing. His film speed was rather high, being of the order of three meters per second. Ruhmer's original "photographon" and some sound records were brought to this country by the Fox Film Corporation. The apparatus was practical and the records show clear definition of the recorded sounds. Although Ruhmer never commercialized his work, he says in one article:

"For practical uses the application of the photographophon in combination with the kinematograph whereby on one and the same film both motion and speech may be recorded should be kept in mind." Also in another article, "As far as simplicity is concerned the glowlight tube surpasses all other previous means for the perception of alternating current curves."

1902: An inventor named Hulsmeyer obtained a patent on producing photographic sound records. This describes "an oscillating mirror which is varied by sound-electric impulses and which reflects a beam through a plate on a photographic strip, through a slit, said plate having a transmission varying in the direction of motion of the reflected beam in proportion to the sine of the angle."

1902: On November 8 a patent application was filed by William Duddell covering a method of variable area recording and reproducing under the title of "An Improved Phonograph." The patent shows a comprehensive knowledge of the subject and mentions making photographic copies.

1903: Wilhelm Asam filed a patent to produce records for photographs using a reflecting diaphragm to modulate a light beam.

1904: F. W. LeTall patented a method for modulating electrically a vapor discharge.

1904: A patent was granted to V. Poulsen (filed in 1901) on a method of magnetizing a moving paramagnetic wire or tape by means of sound waves. It also showed means of demagnetizing or obliterating the magnetic variations along the wire.

1906: Eugene A. Lauste, formerly an Edison employee, with Robert R. Hanes and John S. Pletts filed a patent application on "method and means for simultaneously recording and reproducing

movement and sounds." Although Lauste has been credited by some writers as having the master patent on talking pictures, one is impressed upon examining his patent that he really does not express himself too clearly regarding his technique.

1907: J. F. Dirzuweit patented a photographic method of recording and reproducing sound. He also shows the use of a gas discharge tube for recording. The claims of this patent are rather broad, for instance, "Claim 8—A sound recording apparatus comprising a photosensitive surface and a source of actinic rays movable relative one to the other, and means for exciting said source of actinic rays by and in accordance with sound waves."

1907: Carl Laemmle, of Universal Pictures Corporation, tried to commercialize the "Synchroscope," a system using a phonograph. He achieved some success, but it was found that the regular records used were too short.

1907: Dr. Lee de Forest filed his patent application on the "Audion" covering the addition of a third electrode or grid to the Fleming valve. This became a basic patent of great importance, as it showed the way to make amplification of electrical impulses possible.

1908: A. Manuelli, a resident of Italy, obtained a French patent having "as its object a bicinematographic photophonic machine for public and private displays adapted to insure fixedness of projection, stereoscopic effect, photographic reproduction of sound, etc." He describes a complicated machine using three films.

1908: About this time Edison again brought out another version of his talking picture device, this time called the "Cameraphone." This picture was photographed to synchronize with a phonograph record. As no close-ups were then employed, exact synchronism was not an important factor. It was accepted for a short time only, as a novelty.

1908: J. F. Child patented the making of a photographic record of a manometric gas flame and the use of selenium in reproducing the record.

1910: R. O. P. Berglund, of Sweden, patented recording sound using a mirror attached to a microphone diaphragm, thus modulating a light beam and recording the variations on a sensitive disc or film.

1911: C. C. Timm obtained a Swedish patent similar to that of Berglund.

1911: F. D. Pudumjee, of India, described a method of using a mirror attached to a vibrating diaphragm to produce a photophonograph.

1912: I. H. MacCarty, a resident of the United States, obtained a French patent covering "simultaneous recording by means of photography upon one and the same films of animated views and articulate or other sounds with a view to insure synchronous reproduction of such views and sounds." (His drawing of a combined sound and picture film showed a much keener appreciation of the problem than was shown by Lauste.)

1913: Edison brought out the "Kineto-

phone." This apparatus tried to create synchronism of picture and sound by using a belt connection between a phonograph on the stage and a projector in the picture booth. It had a run of about sixteen weeks in the B. F. Keith theater in New York, but attained no great commercial success.

1913: A patent application for recording sound filed by E. E. Ries was granted in 1923. The following claim from the recording patent gives an idea of its scope: Claim 14—"The method of producing motion pictures and photographic sound records concurrently upon the same photographic film, which consists in moving a photographic film through a camera at a speed adapted to produce a given number of pictures per second, simultaneously moving said film at the same rate per second across the back of a screen having a narrow aperture which exposes the sensitized surface to light in a continuous line or band parallel to the line of pictures and of uniform width throughout its length, limiting the area of exposure to the area of the aperture, and varying the degree of exposure of said line or band in accordance with sound waves impressed upon a sound translating device, whereby said sensitive surface when developed will present adjacent to the pictures a continuous line or band of uniform width and having alternating sections of varying degrees of density of translucency representing continuous waves corresponding to the sound waves impressed upon the sound translating device."

A similar patent covering reproducing was also filed in 1913 and granted in 1926.

In view of the decision in the de Forest-Stanley case, where the Ries reproducing patent was held infringed, it is interesting to note that Ries came to Auburn to see Case in 1923 and offered to sell his patents for one thousand dollars. Also, that opinions by Thompson and Gifford (Mr. Case's patent attorneys) in 1925 were to the effect that it was very doubtful that these patents would be upheld in Court. Ries later sold these patents and several other applications to the de Forest company.

1914: H. G. Stocks filed a patent application covering the process of recording sound photographically by modulating a mercury lamp for the purpose of making an optical phonograph.

1915: H. C. Bullis filed a patent application that was granted in 1920, describing a double system method of recording sound and picture on separate films, running synchronously through a single machine, and the use of marking lights to enable matching of sound and picture after the films were processed.

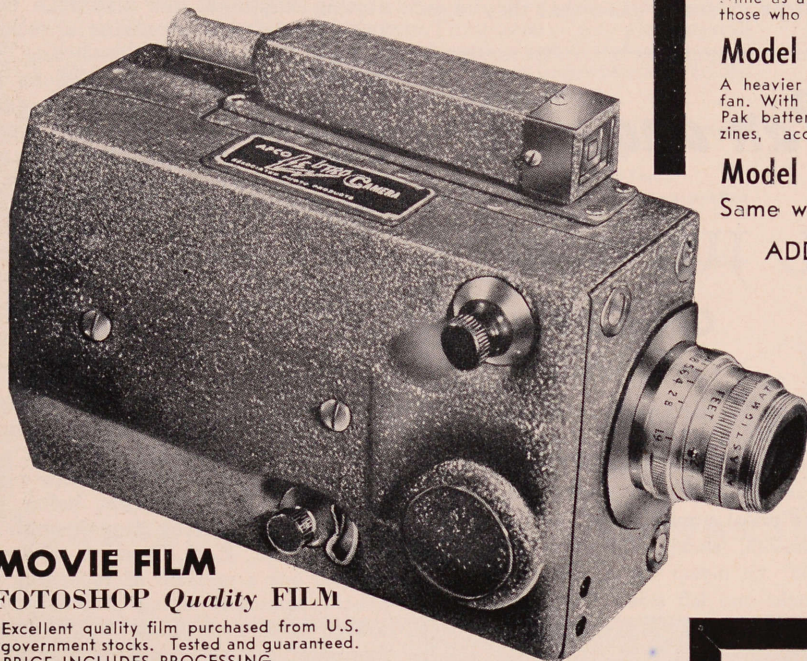
1916: T. H. Nakken obtained a patent on a means for converting sound waves into light variations; also a patent on means for transforming light impulses into electric current impulses.

The various Nakken patents were purchased by the Warners, after having been offered for sale for some time by the inventor.

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	50 ft. Magazine	\$3.25	
	50 ft. Roll	\$2.40	
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Panchromatic. Spooled from Government surplus. Tested—

16mm	50 ft. Magazine	\$2.50	
	100 ft. Roll	\$2.95	
8mm	25 ft. Double-8	\$1.65	

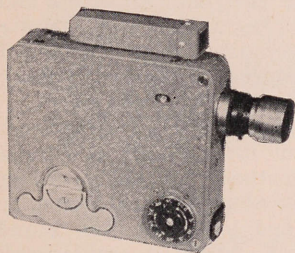
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Same with Kodak fl 9 coated lens

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Same as above models, but fitted with sound speeds—12-24 f.p.s. for those who later wish to "dub" sound into their films at no extra cost.

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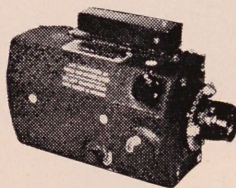
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Luxurious luggage-leather carrying case. Holds camera, battery, film, accessories—with adjustable leather shoulder strap	14.00

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1918: A. C. Rutzen received a patent to engrave a sound track on a moving picture film adjacent to the picture. J. Ballance received a similar patent in 1906. Again in 1926, E. H. Foley proposed the use of a separate film for an engraved sound record. None of these methods has been practical. F. L. Madelar cut his record on the back of the film in the nitrocellulose base with a diamond stylus. Later, similar patents were granted to A. L. Curtis and J. Kaiser.

1918 on: During the summer of this year, experimental work was begun by the German Tri-Ergon group consisting of Josef Engl, Joseph Massole, and Hans Vogt. They worked out a system

of making sound motion pictures using a glow discharge lamp in photographing the sound. The sound was recorded on special film having standard-sized pictures and a space outside of the sprocket holes for the sound band. At the time this system was brought to this country by Fox (1926) it had many novel features but the results were quite inferior to those obtained by Fox-Case methods.

Tri-Ergon obtained about eighteen patents on their system between April 1919 and July 1923. Some of these patents—such as the printing patent, the flywheel patent, and the photoelectric cell patent—were so basic that they later

were the cause of extensive litigation and nearly became controlling factors in sound recording and reproduction. The Supreme Court reviewed the flywheel patent and held it invalid (Mar. 4, 1935).

1918 on: J. Tykociner, at the University of Illinois, worked out a system for producing talking pictures. This work was quite academic and no attempt was made to commercialize it. Variable-density recording was used. Sound and picture were combined on the same film, the sound track being placed inside the sprocket holes and adjacent to the pictures. The system was called "Phonactinon." The sound was recorded by modulating luminous gas discharge devices. Tykociner's paper contains a rather extensive discussion on recording sound. He made several demonstrations before scientific societies. Later he suggested a novel means of recording that was considered quite seriously by Case at one time. This consisted of forming a glow discharge between two closely spaced semi-conductors in air. The separation of the electrodes acted somewhat like a slit, in that it limited the area of exposure on a photographic film placed adjacent to the glow. So far as I know, the merit of this method of recording has never been verified.

1920: D. A. Whitson filed a patent application for producing sound records by passing a beam of light through a Kerr cell, and modulating the latter magnetically, the resulting light being photographed on a moving film through a slit.

1921: Prof. H. O. Rankine, of England, worked out a method of recording sound photographically using a constant light source and controlling the light beam from this source by means of a mechanical "light valve." He used one fixed grid and one movable unit that was controlled by the sound impinging upon a microphone diaphragm. This work was academic and in the nature of a laboratory demonstration.

1921: Grindell Matthews devised a mechanical method of recording sound photographically by producing vibrations of a beam of light from a constant light source.

1921: A demonstration by Professors Aurbenius and Montellius was described in the London Times, Sept. 24, 1921. Two films were used, one for picture and one for sound. They were run in separate machines geared together. The sound record was produced in a manner similar to that employed by Matthews.

1923: The Peterson-Poulsen system was worked out in Denmark. It used a variable-area method of sound recording on a separate film run synchronously with camera and projector. The sound record was made using an oscillograph and a small slit. The process was exploited by Tonfilm, in Germany. The reproducer used a selenium cell.

1923: A United States patent was issued to E. Peterson, showing a variety of arrangements of a magnetic wire imbedded in the marginal portion of a motion picture film.

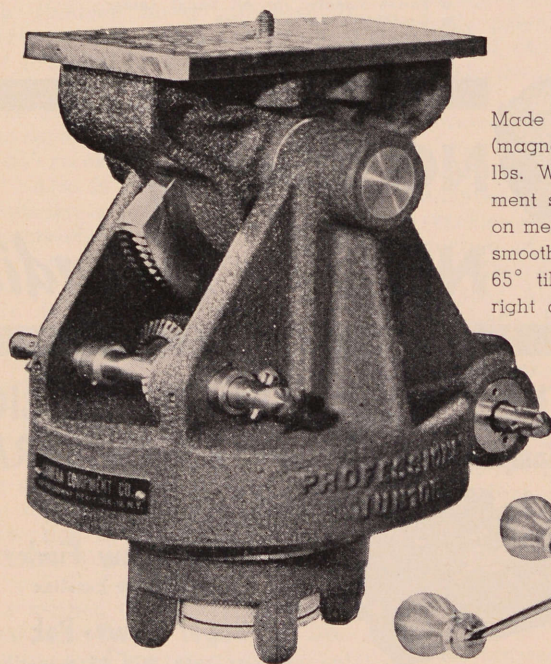
(Continued in August Issue)

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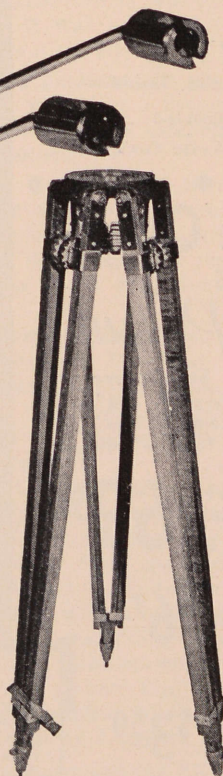


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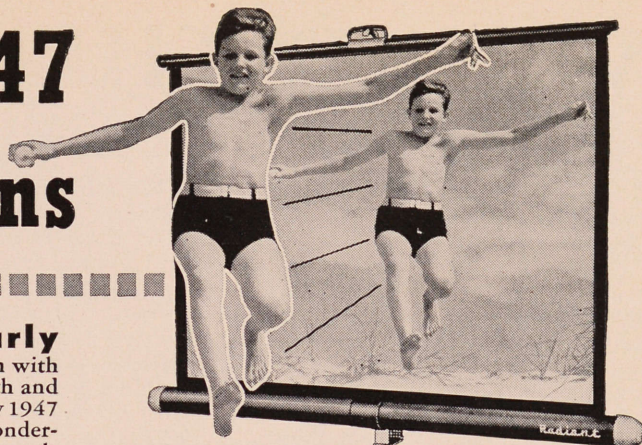
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| 2. Screen Leveller (Pat. Pending) | 8. Rubber-Ball Tripod Feet |
| 3. Shakeproof Safety Catch | 9. Triangular Steel Tube Construction |
| 4. Feather Touch Adjusting Handle (U. S. Patent) | 10. Automatic Leg Adjustment |
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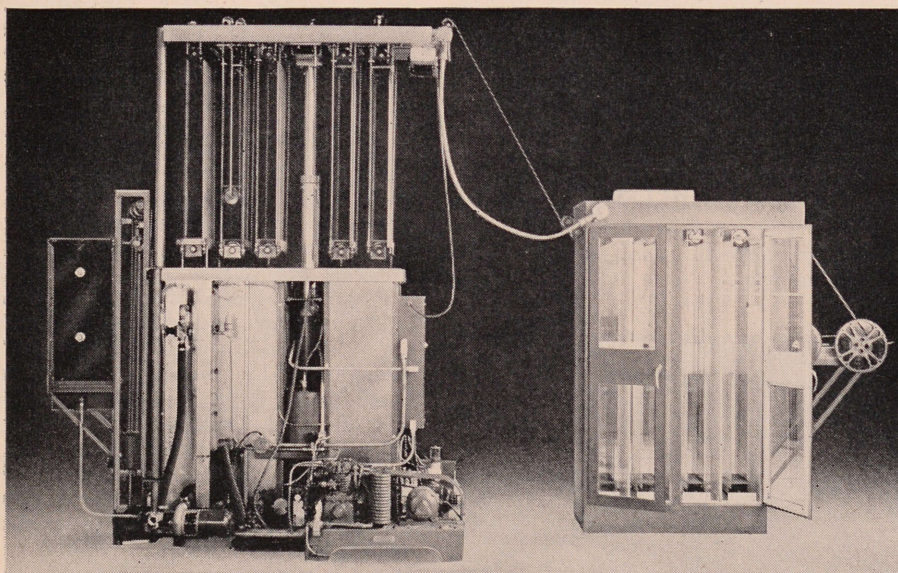
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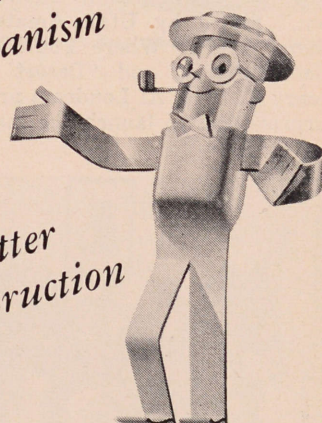
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AMONG THE MOVIE CLUBS

Alhambra La Casa

Tenth anniversary of the La Casa Movie Club, Alhambra, California, was held on night of June 16th at the YMCA Building, with capacity audience attending to participate in the festivities. No less than 18 short reels of various subjects were shown by members, including: Hugh S. Wallace, R. H. Rollins, D. M. Gardner, A. S. Litch, A. J. Zeman, R. L. Johns, D. A. Powell, Mrs. R. L. Johns, William F. Axtman, H. A. McHenry, R. A. Battles, Andrew G. Orear, H. P. Carnahan, L. M. Miller, L. W. Lantz, John H. Clay, and C. L. Ritter. Huge birthday cake was cut by Mrs. Frank A. Manuel.

Interesting information disclosed in club bulletin is fact that La Casa has membership of more than 250 representing 21 cities; and average meeting attendance this year was 247. A record which should make the officers very proud!

Utah Cine Arts

Ted Pope chairmanned the May 21st meeting of Utah Cine Arts Club of Salt Lake City, and also delivered an explanatory talk on the new tape recording methods for the adding of sound to both 8 and 16 mm. amateur films. A surprise picture opened the meeting—to get members in their seats on time—and other films shown included "France V.E. Day," by new member Earl N. Dorius; and "A Vacation in Honolulu," by Ray Sudberry, another new member.

Prize winning films from other clubs comprised the film program for the June 18th meeting, including "In One Generation," filmed by Utah Amateur Movie Club; "Gold Is Where You Find It," by Dick Thiriott; and "Desert Life," by Henry E. Hird. Al Londema provided the surprise film to launch the meeting.

Los Angeles Cinema

Special feature of the June 2nd meeting of Los Angeles Cinema Club was "The Trip Had No Ending," a scenario travelogue presented by Charles M. Peters in which his wife and himself were the principal actors in a trip that started in a mountain blizzard, and terminated in blistering Death Valley. Other films on the program were: "Alaska," presentation of a friend's color picture of that country by Max Laney; "America the Beautiful," an excellent picture secured by Mildred Caldwell; and "Squeaky," by Walter Bergmann of Mt. Vernon, N.Y.

Club's dinner and midyear contest awards will be staged on July 7th. Entries for the contest closed on June 25th, with large number of members' films submitted.

Victoria Amateur Cine

Despite its great distance from the United States, and the large number of amateur clubs in metropolitan cities, Victorian Amateur Cine Society of Melbourne, Australia, appears to be a most progressive organization that can hold its own—in point of activities and accomplishments—with any similar club in this country. Victorian maintains its own clubrooms and theatrette, holding meetings every Wednesday night. Currently, members are completing a club production, "Hubby Gets a Hobby," which was produced on Sundays for best availability of production crew and cast.

Junior Trophy competition entries were screened on May 7th, at which time films were entered from members who have been non-winners in any contest. On May 28th, Les Greenhill presented a lecture—with 16 mm. film and 35 mm. slides, on Rodondo Island, a hitherto inaccessible spot.

Brooklyn Amateur

Charles Benjamin was re-elected president of the Brooklyn Amateur Cine Club at annual election held at May 28th meeting. Other officers include: Eugene E. Adams, vice president; Albert Groman, treasurer; Mrs. Frances Guthman, secretary; and Irving Gittell, Herbert Erles, and Horace Guthman, directors.

Before winding up activities for the summer months, Brooklyn Amateur staged a number of meetings and parties to make up for the layoff period. On May 7th, George A. Valentine of Glenbrook, Conn., provided a program of excellent 8 mm. pictures; for the May 21st meeting, Ralph E. Gray, F.A.C.L., presented his "Paricutin," "Typical Time in the Tropics," and "Primitive Patzcuaro;" on May 28th, in addition to the annual election, film program consisted of "New York Calling," by Fred Beach; and "Kaleidoscopio," by Mr. Machada.

June 4th was "First Film Night," with members asked to dig in their collections and dust off the first films made by the individuals. Pictures dusted off included: "Kids at Play," by Arthur Gross; "Life With Mother," by Louis Dishotsky; "Fox Outing," by Irving Gittell; "Airport," by Sam Fass; and a reel by Anthony R. Barbaro.

Annual dinner party of the club was held at the Village Barn in Greenwich Village on evening of June 20th, and was voted a huge success. On July 20th, members will be guests at the home of the Jay Fox's at Seaford, L.I., for the annual club picnic and weenie roast.

New York Eight

Ninth annual guest meeting of New York Eight M.M. Motion Picture Club proved to be a huge success, with total paid attendance of 275 enjoying a fine program of films.

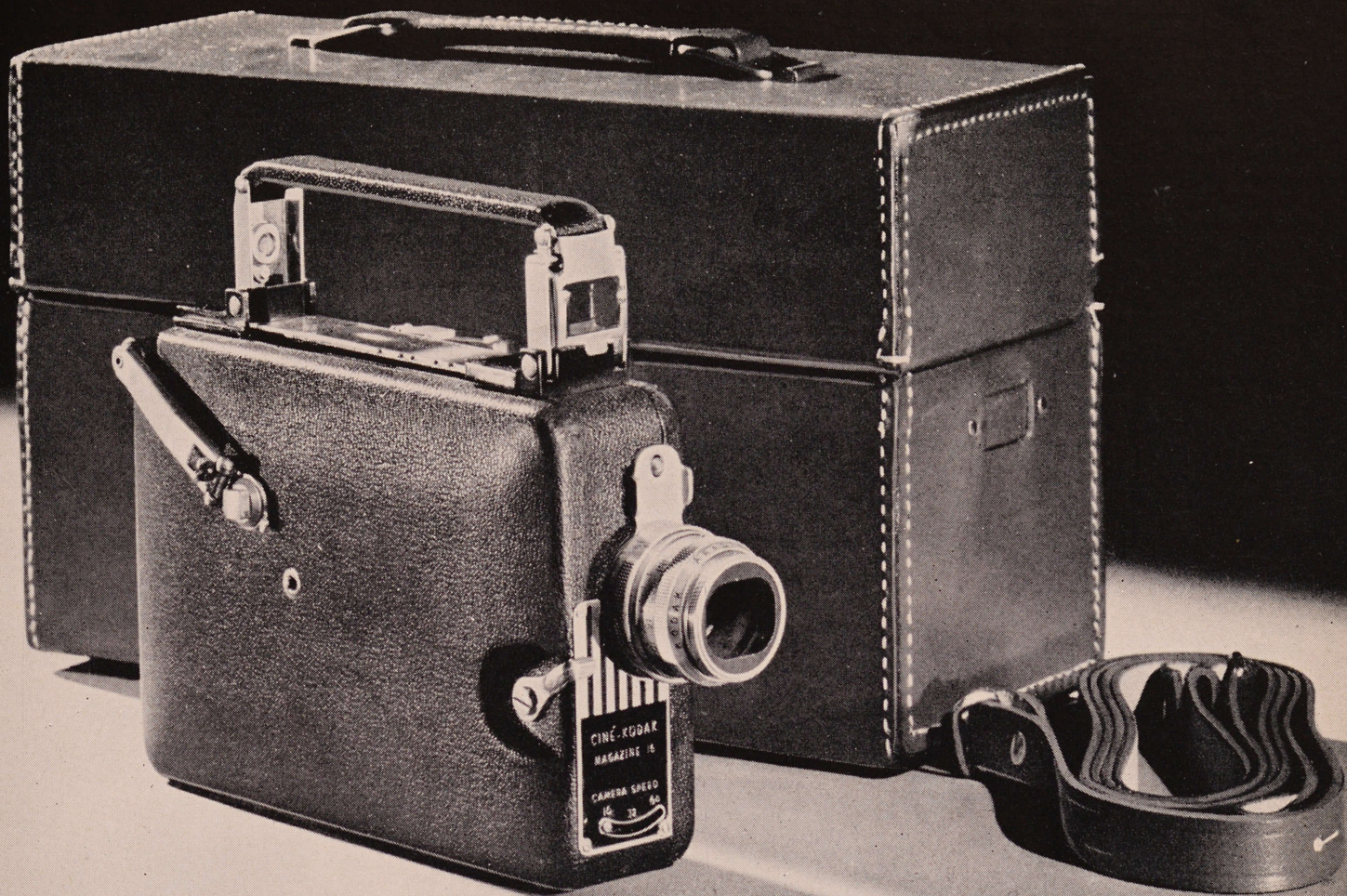
Pictures screened included: "The Artist," by George Valentine; Harlan Webber's "Pinocchio's Jack-O'-Lantern," "Alpine Vixen," by Anchor Jensen; "George Washington Slept Here," by Mr. and Mrs. Edward Roesken; "It's All Over," by Terry Manos; "The Magnificent Accident," by Mr. and Mrs. Raymond J. Berger; and "Escape," by Harry Atwood of Arizona. Show netted a profit of \$38.47.

Philadelphia Cinema

Film program for the June 10th meeting of Philadelphia Cinema Club, held in Little theatre of Franklin Institute, comprised "Capping the Climax," by G. A. de Valle; and "Bryce Canyon and Zion Park," by Belford Neff. Discussion period was staged, with experts answering questions and advising on proper film-making practices. On June 15th, club members visited the Morris Arboretum to point cameras at the roses and other flowers in bloom.



Portion of the 130 members and guests attending recent meeting of the Brooklyn Amateur Cine Club, when Ralph Gray presented a special showing of his films on Mexico.



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Movie favorite of thousands

Ciné-Kodak Magazine 16—the camera that makes personal movies "snapshot-easy"—is the most sought-after camera in the 16mm. field . . .

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That's why the "Magazine 16" is so popular. That's why it's so hard to find. Kodak is making more cameras, projectors, and film than ever, but the demand is greater, too. Keep in touch with your Kodak dealer.

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Minneapolis Octo-Cine

Eighth anniversary party of Minneapolis Octo-Cine Guild was held on evening of June 24th in Colonial Room of the Hasty-Tasty; and event was one of the few times during the year that wives, girl friends and guests were invited to club doings. Following dinner, entertainment program of films was exhibited, and anniversary cake and coffee climaxed the meeting. Club's annual show will be staged in November, with committee chairman Dr. Lindahl currently lining up subjects for the program.

Seattle Amateur

Correct methods of editing movies highlighted the June 10th meeting of Seattle Amateur Movie Club; with explanatory talks augmented by display of various types of splicers, viewers, and rewinds. Film displaying the proper use of the pola screen was exhibited, in addition to several pictures supplied by members.

San Francisco Cinema

"Here and There in America," by Larry Duggan, and "Japan After V.J. Day," by Captain Carl W. Hudson of United Air Lines, provided a splendid film program for the June 17th meeting of Cinema Club of San Francisco, held at the Women's City Club.

Films exhibited at the May 20th meeting included "A Motor Trip to Mexico," by M. L. Dreyfus, and "Skagit," a kodachrome scenic of the mountain region back of Seattle.

Walla Walla Cinema

Head of the Miller Studios turned up with two pretty models—a blonde and a brunette—at the May 26th meeting of Walla Walla Cinema and Camera Club for a lighting demonstration on both black-and-white and kodachrome shots. Four sequences have been completed for the club movie, according to bulletin; and only titles require to be shot to complete the enterprise.

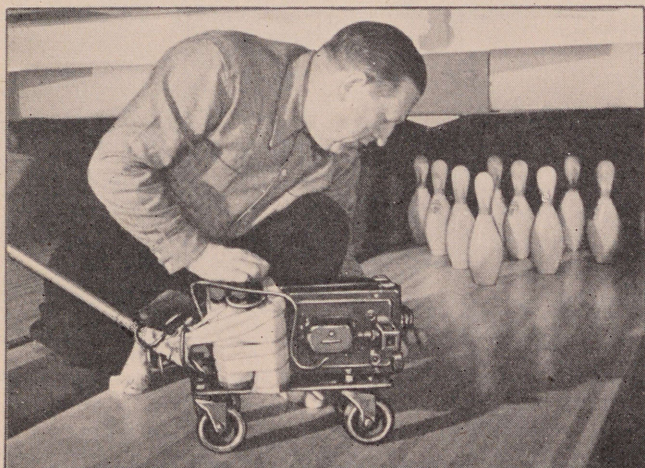
San Francisco Westwood

Film program for the May 23rd meeting of Westwood Movie Club of San Francisco included: "Bryce National Park and Grand Canyon," by member Eric Unmack—a winner in the 1946 Union Pacific contest; "Birth of a Nation," courtesy of L. C. Mueller; and "The Tacklebusters," by Edward Kentera. Special midyear contest closed in June, with number of entries getting under the wire for the non-edited film contest of 50 feet of 8 mm. and 100 feet of 16 mm.

Los Angeles Eight

Ladies' 50 foot contest entries featured the June 10th meeting of Los Angeles 8 MM. Club, held at Arden Farms clubhouse. Harold McEvers is chairman of the Sunday outing travel committee, which is lining up points of interest nearby for group camera trips.

INGENIOUS CAMERAMAN CATCHES CLOSEUP OF BOWLING BALL IN ACTION



1. Paramount News Cameraman Lou Hutt mounts DeVry movie camera on roller skate and checks focus for difficulty "take" ahead.



2. Hutt "aims" up the alley and traces slowly the course he and his DeVry camera will shortly take full speed behind the ball.

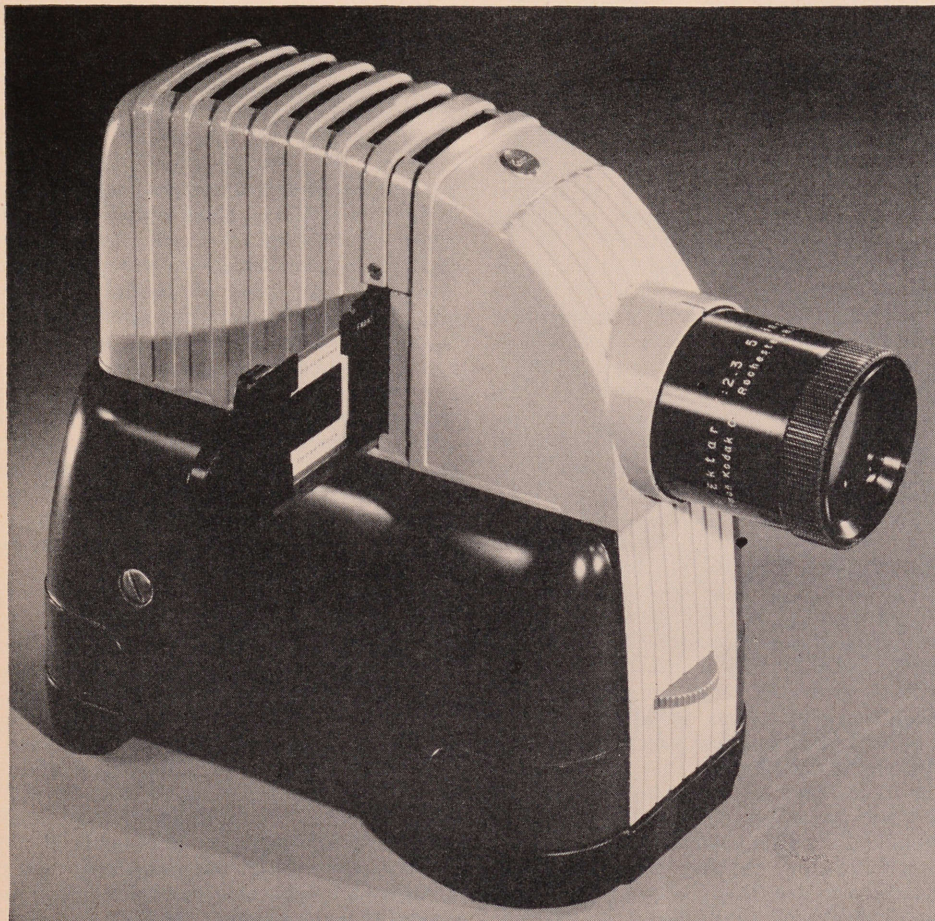


3. Barefoot and intent, Hutt races after the ball, the DeVry camera on its "roller-skate" dolly recording the action.



4. With pins flying everywhere, Hutt's ingenuity and a DeVry camera have filmed a close-up of a bowling ball in action.

New Master Kodaslide Projector



Eastman Kodak announces a new Master model Kodaslide projector, which company states will be available through dealers within the next several weeks.

Suitable for uses ranging all the way from home to theatrical projection, the Master Model is supplied with a 1000-watt projection lamp and may be used with any of four other lamps of from 300 to 750 watts. Five projection lenses are available for use with it: a 5-inch f/2.3 Projection Ektar; a 7½-inch f/2.3 Projection Ektar; an 11-inch f/3.7 Projection Ektar; a 5-inch f/3.5 Projection Ektanon, and a 7½-inch f/4 Projection Ektanon.

Interchangeable condenser lenses insure maximum efficiency with whatever type projection lens is used. Condenser and projection lenses are Lumenized—coated with a microscopically thin layer of magnesium fluoride to reduce internal reflection and increase light transmission. The most efficient type heat-absorbing glass available is employed in this optical system.

As a result, pictures projected with the Master Model have added brilliance, clarity, and contrast because of the increased illumination and the definition provided by the Ektar and Ektanon lenses.

In addition to the heat-absorbing glass, pressurized air helps guard transparencies against excessive heat. The

fan is designed to send three separate blasts of air past the lamp, the condenser system, and the slide itself. The slide carrier and film gate are so designed that the blast of air directed at the slide passes both sides of the transparency. Slide temperature, as a result, is no greater than in many projectors using projection lamps of wattages as low as 150.

Made of die-cast aluminum and attractively finished in two shades of gray, the Master Model is extremely simple to operate. The lens focusing is controlled by turning the barrel, and a single knob controls the tilting mechanism. A carrying case is provided with the projector.

Used with a 1000-watt bulb, the Master Model will project a transparency 76 feet with the 5-inch f/2.3 Ektar lens, yielding a screen image 228 inches wide. The 11-inch f/3.7 Ektar will throw an image 192 inches wide 140 feet.

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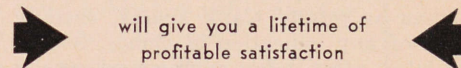
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The wide-angle lens, greatly extended coverage, convertible.

GOERZ DOGMAR F4.5

The perfect speed lens, color-corrected, convertible. For news, sports, portraits, general work, color film.

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The apochromatic process lens, for color separation with perfect register in the final process; also for black and white commercial work.

GOERZ GOTAR F6.8, F8, F10

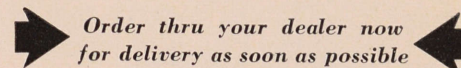
The lens for black and white, process and commercial work, copying and enlarging.

GOERZ HYPAR F2.7, F3

GOERZ APOGOR F2.3

The movie lenses with microscopic definition.

GOERZ MOVIE CAMERA ACCESSORIES



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THE CAPTIVATION OF CLOUDS

By JAMES R. OSWALD

FROM the time an amateur movie maker first takes his newly acquired cine camera in hand and traditionally pans the distant horizon in a 180 degree sweep, it's undoubtedly the fleecy-white cloud-filled sky that has subconsciously, or otherwise, attracted his inexperienced eye toward the scene chosen for this initial attempt at movie making. Or maybe he's not the run-of-the-mill amateur, and has selected, instead, a carefully picked landscape, a rippling lake or stream, or a shaded country lane, to furnish atmosphere for his action shots. But beginner or advanced filmer, it cannot be denied that clouds have to be given credit for adding tremendously to the pictorial qualities of the scene.

More often than not, however, in black and white filming, those beautiful cloud formations which so greatly enhanced the picturesqueness of the scene in real life, and thus were given a preference in film frame area as viewed through the camera's viewfinder, result on the screen as totally blank spaces, entirely void of any indication of clouds. Sooner or later, after a few such experiences, a series of doubts as to the reliability of modern cine cameras, film emulsions, and even processing methods, in bringing out the true-to-lifeness of a scene are set forth. The disgruntled movie maker usually gives out with something like this: "I've got a good camera. I use standard brands of film. Yet those

clouds that played such a prominent part in the original scheme of things are missing. Why, why, why?"

Well, of course, it's neither the camera, the film, nor the processing that's at fault, though it must be recognized that film has certain limitations in comparison with the human eye . . . limitations which must be compensated for if the resultant screen image is to have a perfect resemblance to the original scene. When proper compensation is made, not only is it possible to record faithfully all those desired cloud formations with the simplest of home movie cameras, but, for special effects, such as storm scenes or night scenes, the clouds may be dramatized and overemphasized to almost any degree desired, when it is important that they dominate the scene.

The secret of capturing clouds on black and white films (color films under ordinary circumstances are fully capable of doing a faithful job just as they are) lies in the use of *color filters*. *Color filters* are so called not because they are capable of adding color to a monochrome film, but rather because they, the filters, themselves, are colored, being available in a variety of shades, and in varying degrees of each hue. They come in either glass or gelatin form, in either case merely being slipped in front of the lens when the exposure is made, and held in place by the mount that supports them. The filters we shall speak of here are intended solely for use with black and

white film, and for the purpose of providing a more true black and white rendition of the original scene, particularly of the clouds in which we are primarily interested. The uses of special purpose filters, however, a familiar one of which is the Kodachrome haze filter, are many and varied, each serving a definite purpose, but beyond the scope of this article on *clouds*.

The purpose of color in a filter, then, is to balance or make up for certain deficiencies in black and white film. These are not defects in any particular film, but a characteristic of *all* emulsions.

Sunlight contains vast amounts of ultra-violet, violet, and blue rays, to which all photographic films are especially sensitive. Panchromatic emulsions are also capable of recording the green, yellow, orange, and red light of the spectrum, in lesser degrees. But since both white clouds and blue sky contain such an abundance of light to which all films respond, ultra-violet, violet, and blue, if enough exposure is given to show detail in the rest of the scene, ordinarily we should not be able to distinguish between the clouds and the sky. A way must be found, then, of differentiating between clouds and sky so they will record in their true relationship to each other, unless intentionally accentuated. And herein lies the solution . . . the proper filter, of course.

While white clouds and blue sky both



contain ultra-violet, violet, and blue light, there is a definite difference between the two. The clouds, being white, in reality contain a great deal of green and red light, while that from the blue sky does not. By providing a means, then, of preventing most of the ultra-violet, violet, and blue light, which both the white clouds and the blue sky have in common, from registering on the film, while at the same time permitting the exposure to be made by the green and red light of the clouds, which the blue sky does not possess, we have a decided way of making the clouds appear whiter than the sky in the finished film.

What color filter will serve this purpose? A *yellow* filter's the one to use, in this case. This is because yellow is the color that results if ultra-violet, violet, and blue are removed from white light, it therefore being the *complement* of these colors. Consequently, when placed over the camera's lens, a filter of this color *holds back* the ultra-violet, violet, and blue light, at the same time letting the desirable colors, green and red, pass and register on the film. Thus, the overall rendition of black and white color values is preserved by this *balancing of the emulsion* at the time of exposure.

From this it may be readily seen, too, that by using filters of various shades of yellow, decidedly different effects may be obtained in the finished film, while a red filter provides those highly dramatic effects, with an extremely darkened sky, white clouds predominating. Since only panchromatic type emulsions are sensitive to red, however, a red filter must only be used with such films.

Obviously, the very fact that a filter is colored, and decreases the total amount of light reaching the film, suggests that an increase in exposure time is necessary over that required when not using a filter. The amount of increase depends, naturally, upon the density of the filter, itself, as well as the sensitivity of the film with which it is being used. This increase is known as the *filter factor*. Thus, for example, if a filter has a factor of 2, twice the exposure must be given the scene when that particular filter is used than would otherwise be required without it. The filter factor always accompanies the filter, or may be easily obtained from the manufacturer or through various charts or data sheets. Most authorities agree that, for all practical purposes, if but one filter is to be selected, yellow is the best all-around color to use.

Sunrises and sunsets are about the only scenes in which a filter is not necessary to record the clouds. But even in these two widely separated examples, the difference between one of these shots filmed without a filter and one filmed with one, is beyond comparison. Whether you're in mountainous terrain, down at the seashore, or filming in your own back yard, any shot where clouds are prominent is a *better* shot with a filter!



"OUT WHERE WESTERNS BEGAN"



"Drop that thar shootin' iron Podner... We're Aimin' to end cattle rustlin' in these hyar parts... Round up a posse boys... They went thataway!"

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THE CINELITE

An important member of the Mole-Richardson family, this 1000-watt incandescent flood provides ideal basic light. Weighing only 27 pounds, it can be quickly disassembled into three easy-to-handle components: dome, folding stand, and cord. It's perfect for "location" jobs.

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Photographic Lighting Equipment Since 1927

A PRACTICAL COMBINATION SUNSHADE-MATTE BOX

BY AL LINKO

The master of light and shade in Hollywood no sooner would think of shooting without a lens hood than grandpa could be persuaded to doff his long flannel underwear. Their many years behind a camera have taught them that this accessory is an indispensable "must" in their bag of tricks.

Adding other features to its earliest form, they have created the flexible

"matte-box" of today. In order to render it more effective they add another hood and pay particular attention to shielding the sun and "goboing" their lighting units. That all this additional "annoyance" pays dividends in quality is doubtless proven on the screen of your local theatre. The definition, the absence of flare, the wholesome depth, and roundness of their product attests to the ap-

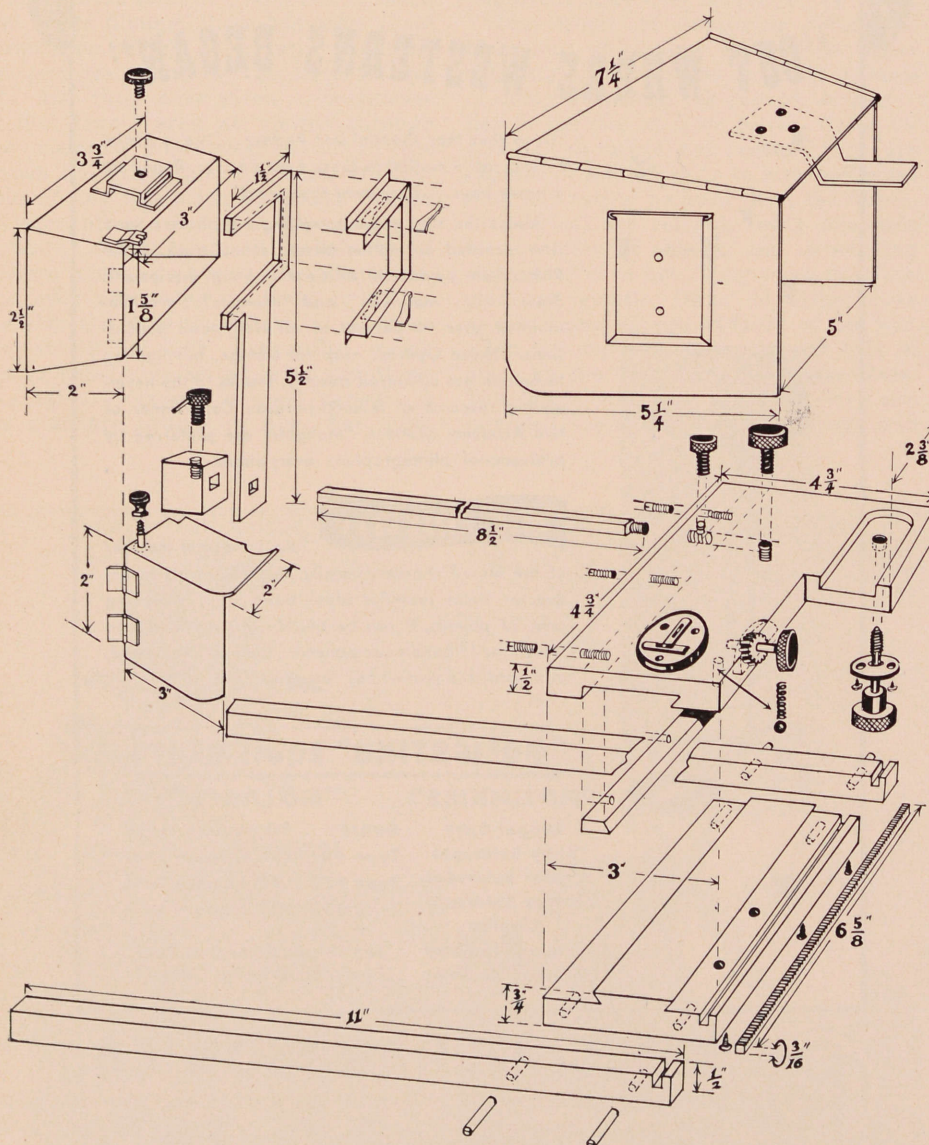
plied efforts of these camera aces.

The comparison between two shots of a scene—one with a hood and one without—will convince the most callous "doubting Thomas." Amateurs particularly will find startling improvement in their results if they would heed this precaution when shooting. I have seen 16mm. film both black-and-white and Kodachrome that defy comparison with 35mm. film when said 16mm. film was exposed with due care for shielding the lens. I set out to do something about it, and the result is the cinematic gadget pictured here. True, it has been augmented somewhat, but only because of the need for other conveniences which were desired at the time. The "gadget," as I refer to it with reverence, is doing more than was originally hoped for.

It was desired to combine the matte-box with a sliding arrangement for alignment of close-ups and titles, and that the combination along with the camera could be mounted on any amateur tripod. This feature is appreciated today when it is necessary to make a quick change to a baby tripod, for example, for a simple turn of the lock-screw frees the entire assembly instantly.

A piece of soft steel $\frac{3}{4}$ "x3"x5 $\frac{3}{4}$ " served to cut the base to which are added the side arms. A hole is drilled into the bottom and tapped to take a standard tripod screw. For the sliding top to which the camera is secured, a piece $\frac{1}{2}$ "x4 $\frac{3}{4}$ "x4 $\frac{3}{4}$ " was used. The dovetail joint was then machined to the dimensions indicated. Those readers who have no access to a metal-working shop may have their cutting done by any machinist or, if so desired, the assembly may be constructed of laminated sheets. The remainder of the work is readily accomplished with a few simple tools.

The female member of the dovetail assembly was machined to permit adjustment for tension, as illustrated. This is highly recommended for two reasons: First, the work of cutting need not be so very exacting as would be necessary for any individual camera. Secondly, with a tension adjustment there is no "sag" to the camera in either the viewing or shooting positions. The screws entering the front of the block perform



Detailed drawing for construction of the combination sunshade-matte box.

(Continued on Page 260)



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All along, we've been telling you how easy it is to get this life, this naturalness in *your* home movies.

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8 and 16mm

HYPAN FILM

"Lubitsch Touch"

(Continued from Page 239)

be as simple as the manufacture of shirts or pup tents, according to Mr. Lubitsch.

The Lubitsch touch? It's best described by its creator himself when he gave this answer to an inquiring reporter:

"What exactly, you ask me, is the

Lubitsch touch? It's the king in his bedroom with his suspenders hanging; it's the gondola hauling garbage in Venice while the gondolier sings romantically in the moonlight; it's the husband bidding his wife a melancholy good-bye and then dashing madly for the nearest telephone booth. It's naughty and it's gay. It's based on the theory that at least twice a day the most dignified of human beings is ridiculous."

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Ampro's British Manufacture Of 16mm. Projectors

Ampro Corporation of Chicago has completed arrangements for the manufacture and distribution of Ampro 16mm. silent and sound projectors in Great Britain. Manufacture of Ampro equipment will be handled by Kelvin, Bottomly and Baird, Ltd., of Glasgow, Scotland; while Henry Hughes & Sons Ltd. of London will take care of the optical systems required. Both companies have fine reputations for precision craftsmanship.

Newly-formed British company, "Simplex-Ampro, Ltd.," will direct sales of the Ampro projectors in Great Britain, Ireland and the Continental markets. Contracts for the British manufacture of Ampro 16 mm. projectors, from design and specifications of the company in Chicago result from the affiliation of Ampro with its parent company, General Precision Equipment Co., and is in line with plans for developing worldwide expansion programs of the product.

New B&L Vice Presidents

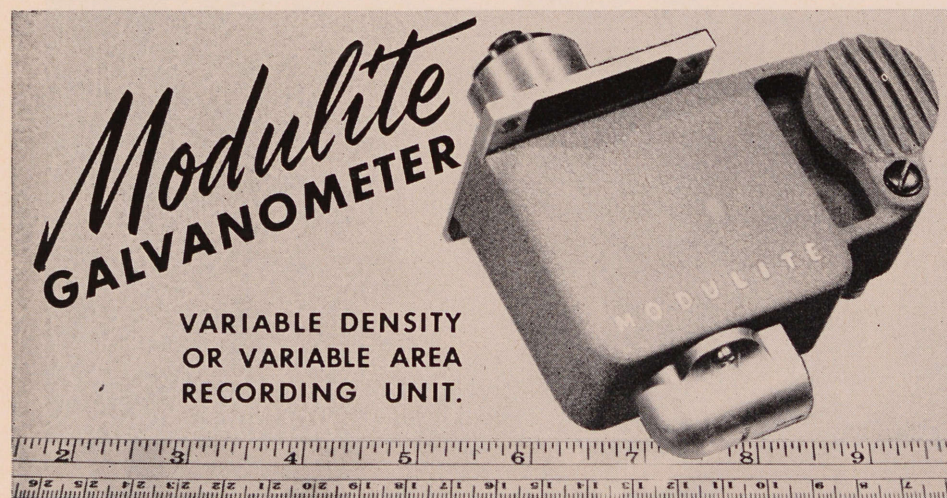
Ivan L. Nixon and Ben A. Ramaker were elected vice-presidents of Bausch & Lomb Optical Company at recent meeting of company's board of directors. Officers re-elected include: M. Herbert Eisenhart, president; Joseph F. Taylor, vice-president and treasurer; Carl L. Bausch, Theodore B. Drescher, and Carl S. Hallauer, vice-presidents, and Edmond S. LaRose, comptroller.

Modern Language Instruction Via Soundfilms

Series of ten 400-foot reels of 16mm. soundfilms have been compiled for the teaching of French, and are now available to schools and colleges for newest method of instruction. Under trade-name of Langofilm, series was written and produced by Adolphe Pervey, currently assistant professor of French at Swarthmore College, Pa.

Bell to Paris For Westrex

William L. Bell has been appointed European recording manager for Westrex Corporation, and is currently setting up headquarters in Paris. Westrex is the foreign motion picture equipment and service subsidiary of Western Electric Co.



- * Linear response makes processing easier especially on density recordings.
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- * Requires only 300 milliwatts for full modulation.
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NEW PRODUCT

Briskin 8 mm. camera is the latest to enter the field of the minnie field. Important feature is magazine loading which eliminates threading, and provides for instant change from color to black-and-white. Ted Briskin, former president of Revere Camera Corporation, is president of the new enterprise; while film star Betty Hutton (Mrs. Ted Briskin) is vice president.

Craig Manufacturing Co. of Los Angeles is again marketing the pre-war senior splicer for 8 and 16 mm. films.

Wollensak Optical is now producing the full line of new Raptar lenses for both still and motion picture photography. Raptar lenses will supersede the Velostigmat lenses which will no longer be made.

George K. Culbertson Company is making immediate deliveries of Fidelity dual turntable, which allows 16 mm. sound projector owners to add continuous sound accompaniment to silent films.

Radiant Manufacturing Co. of Chicago has just issued a new catalogue describing and illustrating the many types and models of projection screens manufactured under the Radiant trade mark. It is designed as a handy reference guide, containing charts showing screen sizes, lens focal lengths, audience capacities and seating plans.

Peerless Camera Stores of New York will introduce and market new photographic products under the Peerless brand name. Initial item is the Peerless Movie Kit.

American Bolex Co. will handle exclusive distribution of Ambolac, a new film preserver which can be applied to film without special equipment.

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WARNING . . .

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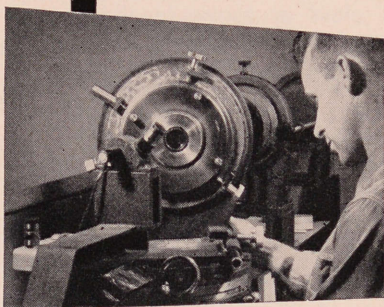
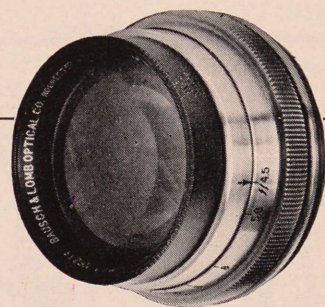
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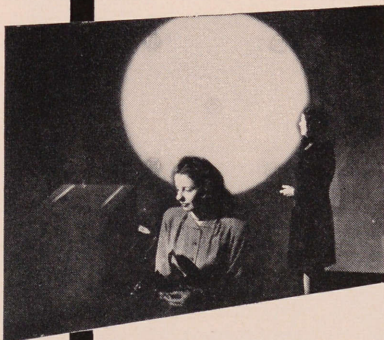
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All lenses released by Bausch & Lomb are *uniformly* corrected for aberrations—coma, astigmatism, curvature of field, and distortion, and checked for resolving power and focal length, to insure *uniformly high quality* lens performance—an important factor in establishing American-made Bausch & Lomb photographic lenses as the ultimate in quality among photographers everywhere.

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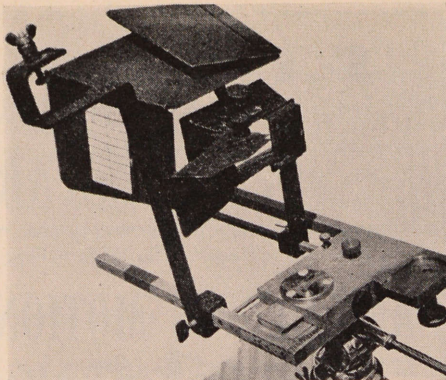
Sunshade—Matte Box

(Continued from Page 256)

this function. Another hole for a $\frac{1}{4}$ " bolt is drilled and tapped to receive the "iris-bar" upon which the matte-box rides. Thumb screws lock the iris-bar and rack-over.

The rack and pinion assembly was restored from an otherwise worthless view camera only after efforts to cut the parts accurately failed. It is important that the parts mesh perfectly, of course.

The rearmost projection on the female sliding piece is recessed to permit snug mounting of the camera. The importance of good routing here cannot be over-emphasized, since, if properly done, the camera may be discounted at will and replaced with assurance that alignment has not been altered. This is convenient, for example, when it is necessary to reload bulk film in a darkroom or when testing for superimpositions, etc. A



The assembled accessory, showing mounting procedure.

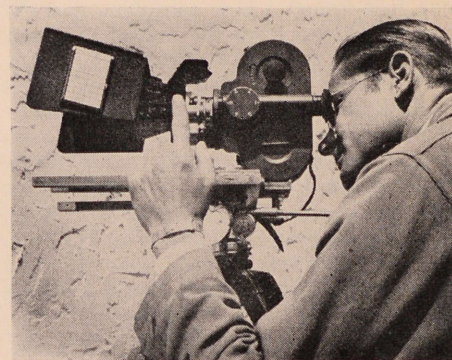
U-shaped metal piece screwed to the member would substitute for the routing—this for the man without equipment. A $\frac{5}{16}$ " hole is then drilled to receive a standard tripod screw. A washer underneath retains the screw and prevents its dropping out. A $\frac{3}{16}$ " hole is drilled $\frac{3}{8}$ " deep into the underside of the female member to accommodate a spring and ball bearing. As the member is moved across the base, the bearing under tension from the spring, rides with it and engages one of two circular niches; one for finder alignment, the other for lens alignment. Locating the latter is accomplished by placing a piece of ground glass or tissue in the camera gate, carefully centering on a focus test card, and marking the spot to be drilled. Having done this the camera is moved to the right as far as it is necessary to place the finder in the same relative position as that occupied by the objective, as viewed on the card. This spot is then marked and the niches drilled to a depth of $\frac{3}{32}$ ", just enough to engage the bearing without lodging it. A T-type level is screwed to the side nearest the operator. The rack is secured in the base in a recess by means of screws inserted from underneath.

The side arms provide a means of mounting celluloid cloud filters, large mattes, vignettes, gobos, or lightweight fill-in lamps near the lens. The parts were then cadmium plated to prevent corrosion and the unit reassembled. Some of the moving parts will require some working over since the thin coat of plating hampers smooth operation. A bit of

steel wool rubbed over the offending surfaces will usually eliminate the roughness.

For the matte-box proper, $\frac{1}{32}$ " galvanized tin sheeting was used. This material lends itself well to cutting, bending, and soldering, and forms a sturdy unit. Since it was desired to keep three particular lenses on the turret during most of the shooting, a bit of experimenting with cardboard frames was necessary to determine the size of the lens shade and filter receptacle. The latter is just a trifle over $1\frac{1}{4}$ " square inside and fits flush with the shooting lens without meeting with obstruction from any other combination on the turret.

Brass springs soldered inside the receptacle on top and bottom retain the filter or matte. The addition of the hinged portion offers further protection from stray light and shields the finder lens as well. The upright was cut from sheet steel $\frac{1}{8}$ " x $\frac{3}{4}$ " x $5\frac{1}{2}$ " and soldered to the cubic base properly drilled and filed to slide along the iris-bar.



The author demonstrates its practicability.

A pin inserted in the head of the lock screw facilitates adjustment. The top of the upright is soldered to the lens shade on the front and to the matte receptacle to the rear. Piano hinges riveted to three aluminum sheets comprise the collapsible hood. A discarded flash-gun provided the arm and cleat for quick mounting to the matte-box. The completed matte-box and hood were then covered with a matte crackle-finish paint and baked in an heat-treating oven. A paint that produces a crackle-finish without the necessity of baking is now available.

Four-way brackets built to slide along the side arms are used to mount "dinkie-inkies" or other fill-in lighting units as well as the mattes, etc., mentioned earlier in this article. The gadget weighs about seven pounds complete, is well balanced, and affords smooth steady camera manipulation.

Long Joins Radiant

George Long has joined the executive staff of Radiant Manufacturing Co. and will handle sales activities in the mid-western area. During the war, he produced many films for the Navy training program.

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New Sound Re-Recorder Announced by WE

Electrical Research Products division of the Western Electric Company has announced a new re-recorder, the RA-1251, which differs radically in both appearance and design from former conceptions of film re-recording machines for professional 35 mm. work.

The complete machine is installed in a panel type cabinet which may in turn be mounted on a cabinet of similar appearance containing a loop rack for loops up to 30 feet in length. Facilities for use of reels are also provided in the main cabinet. Glass doors permit observation of operation while excluding dust. This package not only permits installation of a greater number of re-recording units in a given space, but by its functional design greatly facilitates operation and maintenance.

Employment of a new and novel film pulling mechanism has reduced inherent flutter content to an extremely low point. The flutter generated by the RA-1251 does not exceed 0.05 percent in any particular frequency band, with total flutter no more than 0.07 percent.

Accurate fixing of the loop is assured by an automatic loop setter which obviates observance of a threading guide or any similar device during threading. To further assure precise operating synchronization, a motor disconnect clutch permits the operator to thread the synchronous starting mark on the film at any point in sight and then roll the mark to the scanning point by pressure of a push-button which provides positive declutching. In this way, the driving machines may be set in proper position for starting.

During operation, the RA-1251 may be adjusted by as much as two sprocket holes by a simple adjustment which is made on the front of the main casing. Its method of vernier synchronization gives accuracy of better than one sprocket hole.

The main casing of this re-recorder, containing optics, scanner assembly, and filter arms, is isolated by special mounts from the driving equipment, reducing vibration in the optical system to a minimum.

The optical system, itself, is capable of uniformly scanning within a db any track width falling within the 220 mil scanning beam, making possible the scanning of all existing types of 100 mil and 200 mil tracks without moving optics or film. The frequency response closely approximates the theoretical for a one mil slit.

Greatly simplified rewinding is provided by the separate motor driving unit which is arranged to supply rewind to the upper reel. The speed of rewind may be adjusted, while an automatic rewind cutoff stops the rewind motor when the film is completely rewound.

Designed in close cooperation with the motionpicture industry, the RA-1251 Re-recorder marks an advance in the sound recording field.

Monson Retires From Ampro

Axel Monson, founder of Ampro Corporation and president since its inception more than 32 years ago, is retiring from active duties, according to company announcement. He will retain his connection with Ampro as chairman of the board, in addition to functioning in a consulting capacity.

A. J. Palmer, former vice president of General Precision Equipment Corporation, Ampro's parent company, will succeed Monson as president and general manager. Monson has long been recognized as a pioneer in the development and production of 8 and 16 mm. silent, and 16 mm. sound projectors.

T. Albert Potter Elected to Bell & Howell Board

J. H. McNabb, Bell & Howell Company President and Board Chairman, has announced the recent election of Mr. T. Albert Potter, President of Elgin National Watch Company, as a Director of Bell & Howell Company.

According to Mr. McNabb, the election of Mr. Potter should prove highly advantageous to both companies inasmuch as "many problems peculiar to high-precision manufacture are shared in common by Elgin National Watch and Bell & Howell, and the closer liaison between executives of the two firms should show gratifying results."

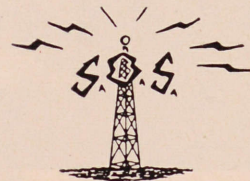
DeVry Projectors on Matson Ships

DeVry film projectors and sound systems are currently being installed on passenger ships of Matson Navigation Co., which ply between west coast ports and Hawaii, Samoa, Fiji, New Zealand and Australia. Movies will provide major entertainment for passengers during the trans-Pacific crossings.

U. S. Films Entered in Brussels World Film Festival

Total of 23 non-theatrical film subjects in 16 mm. size have been entered in the World Film & Fine Arts Festival in Brussels by the Committee on American entries. Latter committee was appointed by William F. Kruse, president of the Allied Non-Theatrical Film Association. Among the group of films shipped were nine produced by various government departments, and 14 made as commercial and educational subjects.

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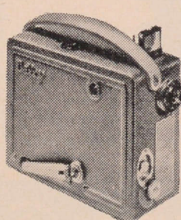
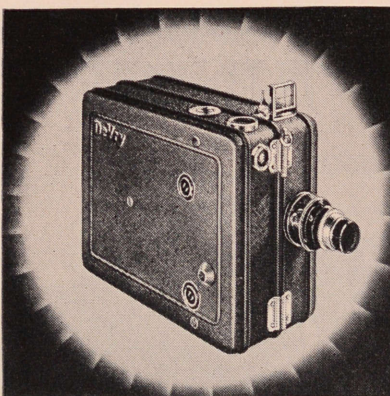
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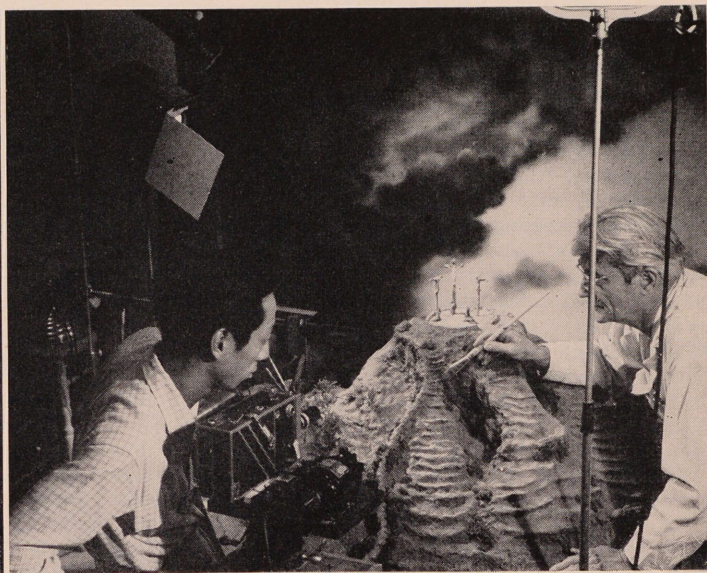
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Miniatures and Puppets Used in Religious Film



Animation, miniatures and puppets were utilized for production of "The Way To Peace," a religious picture. At left: Wilbur George (center) is busy on animation sketches while Carl Ryan and William King work on the set. On right: Wah Ming Chang focuses the camera as art director Blanding Sloan puts some final touches on the miniature set.

"The Way to Peace" is a religious picture produced by Wah Ming Chang and Blanding Sloan of the East West Studio, Los Angeles, for the Wartburg Press of Columbus, Ohio.

The story was written and directed by Frank Tashlin from the original conception and technical supervision of Rev. H. K. Rasbach of Christian Films in connection with the American Lutheran Church. The musical score was composed and conducted by Eddison von Ottenfeld in accompaniment to the narration by Lew Ayres. Blanding Sloan rendered the art direction while Wah Ming Chang conceived the puppet design and accomplished the photography—with a staff to

assist both—being Carl Ryan and William King (puppet makers), Wilbur George (set maker), Richard Lord (prop maker), and Gene Warren and Herbert Johnson (animators). The composite of audio-visual mediums were expertly edited to this completed film by Stuart O'Brien. Glen Chang, wife of Mr. Chang, is credited with doing the stills.

The picture, made with miniatures and puppets and taking some eight months to produce, is very interesting and well done. The montages, lighting and lap dissolves are quite perfect. The story is timely and holding. Beginning with the creation of the earth and of human beings, then came a sequence depicting the

walls of hate that grew in men's hearts. This was very well told in a montage of animated blocks and creeping shadows.

Several beautiful scenes portraying the Star in the East and the locale around the birth of Christ, his teachings to the multitudes, crucifixion, etc. . . . but by this time we had almost forgotten that the actors were little puppets and the scenes but little miniatures that would hardly cover the top of a table.

The last sequence of "The Way of Peace" is quite terrifying for it dwells on the modern atomic bomb and the gradual destruction of all mankind, ending up with the earth but a burning mass whirling off into space.

The picture, while religious, is universal, for it does not speak of or show any beliefs, creeds or denominations whatsoever. It is a picture in its entirety for the grown-ups; it has a message against hate for them and the teenagers; but for the smaller children, I feel any father or mother would want to show them the picture minus the atomic sequence, and this much of the picture I think will become a classic to exhibit around Easter and Christmas time.

Reviewed by Glenn R. Kershner, A.S.C.

“PROFESSIONAL JUNIOR”

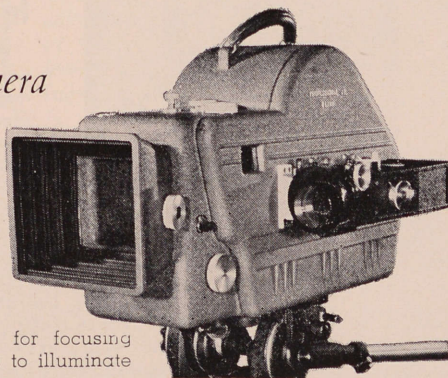
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Two Worlds in Technicolor

(Continued from Page 237)

device known as the *camera obscura*. Appearing in a motion picture for the first time, this clever arrangement of mirrors and prisms reflects on the screen of a darkened room a panoramic view of the countryside surrounding the "hobby tower" of one of the characters in the story. The mechanics necessary to simulate this effect involved the development of several new techniques of trick projection.

At several points in the film, miniatures are used to provide long shots of some of the more spectacular sets, but they blend in so perfectly with the real thing that there is no effect of unreality. The escalator is shown several times in this manner; and in the heavenly trial sequence, as the camera begins to pull back from the set, there is a dissolve to a super-long shot of the amphitheatre (in reality a miniature), which blends in smoothly with shots of the actual set.

"Stairway to Heaven" is an example of top-notch entertainment combined with a craftsmanship that shines proudly from every frame. In itself it is a tribute to the skill and good taste of Messrs. Rank, Powell, and Pressburger—who prove in this sparkling length of celluloid that it is possible to combine "art" with "box office."

Photography Wins!

The art of photography, whether it be still or cinema, can "make unbelievable realities believable." This fact is pointed out in an article appearing in Time Magazine of June 2nd, 1947, page 53, which is printed in full by special permission below:

Camera v. Brush

The snow-capped spine of the U.S. and the grandeurs of the West must be seen to be believed. This week Fortune readers got the next best thing: pictures of western national parks through the eyes of four artists and a photographer. The photographer won.

The artists had done their best. Surrealist Max Ernst contributed a waxy "translation" of Utah's Bryce Canyon. Jane Berlandina's abstractions of the Sierra peaks were appropriately lonely and cool, inappropriately pretty. David Fredenthal had taken a pack trip into the gouged, crumpled high country of Glacier National Park. Dong Kingman had made Grand Teton Mountain burst like a cloud-breathing dragon out of the plain, but the mile-deep solidity of its pine-covered ribs had escaped him.

The cold glass eye of Ansel Adams' camera, however, recorded precisely what it saw. The results helped explain why, since the perfection of photography, artists have come to scorn "naturalism" in painting, and wandered off into the by-paths of impressionism, abstraction and surrealism. When it came to making unbelievable realities believable, the camera had it all over the brush.

Houston Processing Machines Used the World Over

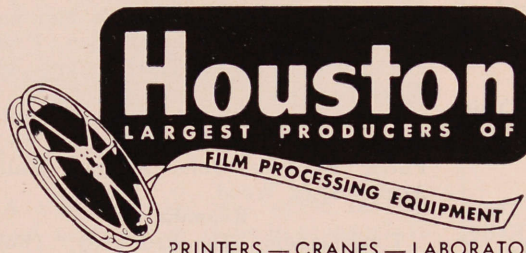
In almost a score of foreign countries, Houston machines are now serving to process films where special technical excellence is wanted. Regularly, new names are being added to the list.

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Current Assignments of A. S. C. Members

As this issue of *AMERICAN CINEMATOGRAPHER* goes to press, members of the A.S.C. were engaged as Directors of Photography in the Hollywood studios as follows:

Columbia

Vincent Farrar, "It Had to be You," with Ginger Rogers, Cornel Wilde, Ron Randall, Percy Waram, Spring Byington.

Charles Lawton, Jr., "I Love Trouble," with Franchot Tone, Janet Blair, Janis Carter, Lynn Merrick.

Henry Freulich, "When a Girl's Beautiful," with Adele Jergens, Marc Platt, Stephen Dunne, Patricia White.

Joseph Walker, "The Mating of Millicent McGonicle," with Evelyn Keyes, Glenn Ford.

Eagle-Lion

Jack Greenhalgh, "Adventures of Casanova," with Arturo de Cordova, Noreen Nash, Lucille Bremer, Turhan Bey, John Sutton, George Tobias, Lloyd Corrigan, Fritz Leiber.

Enterprise

Russell Harlan, "They Passed This Way," with Joel McCrea, Frances Dee, Charles Bickford, Joseph Calleia.

Metro-Goldwyn-Mayer

Harry Stradling, "The Pirate," (Technicolor) with July Garland, Gene Kelly, Walter Slezak, Gladys Cooper, Jerry Bergen, Ellen Ross.

Robert Planck, "Cass Timberlane," with Spencer Tracy, Lana Turner, Mary

Astor, Cameron Mitchell, Albert Dekker, Margaret Lindsay.

Robert Surtees, "The Kissing Bandit," (Technicolor) with Frank Sinatra, Kathryn Grayson, J. Carrol Naish, Sono Osato, Mildred Natwick, Edna Skinner, Billy Gilbert, Mikhail Rasumny.

George Folsey, "If Winter Comes," with Walter Pidgeon, Deborah Kerr, Angela Lansbury, Binnie Barnes, Reginald Owen, Janet Leigh, Rhys Williams.

Charles Rosher, "On An Island With You," (Technicolor) with Esther Williams, Peter Lawford, Jimmy Durante, Ricardo Montalban, Cyd Charisse, Xavier Cugat.

Joseph Ruttenberg, "Killer McCoy," with Mickey Rooney, Elizabeth Taylor, Brian Donlevy, James Dunn.

Paramount

Ray Rennahan, "Whispering Smith," (Technicolor) with Alan Ladd, Robert Preston, Donald Crisp, Brenda Marshall, William Demarest, Fay Holden, Frank Faylen, J. Farrell MacDonald, John Eldredge.

Daniel Fapp, "Dream Girl," with Betty Hutton, Macdonald Carey, Virginia Field, Patric Knowles, John Abbott, Walter Abel, Peggy Wood.

Republic

Tony Gaudio, "The Red Pony," (Feldman-Milestone Group Prod.) with Myrna Loy, Robert Mitchum, Louis Calhern.

RKO

George Barnes, "Mourning Becomes Electra," with Rosalind Russell, Michael Redgrave, Raymond Massey, Katina Paxinou, Henry Hull, Nancy Coleman.

Lucien Ballard, "Memory of Love," with Dana Andrews, Merle Oberon, Ethel Barrymore, Hoagy Carmichael, Artur Rubinstein.

Gregg Toland, "The Bishop's Wife," (Samuel Goldwyn Prod.) with Cary Grant, Loretta Young, David Niven, Monty Woolley, Elsa Lanchester, James Gleason, Isabel Jewel.

Nick Musuraca, "I Remember Mama," with Irene Dunne, Barbara Bel Geddes, Oscar Homolka, Philip Dorn, Sir Cedric Hardwicke.

J. Roy Hunt, "Return of the Badman," with Randolph Scott, Anne Jeffreys, Gabby Hayes, Robert Ryan, Robert Armstrong.

Selznick

Joe August, "Portrait of Jennie," with Jennifer Jones, Joseph Cotten, Cecil Kellaway, David Wayne, Albert Sharp.

Twentieth Century-Fox

Joseph LaShelle, "The Foxes of Harrow," with Rex Harrison, Maureen O'Hara, Richard Haydn, Gene Lockhart, Vanessa Brown, Victor McLaglen, Hugo Haas, Dennis Hoey, Charles Irwin.

Harry Jackson, "Off to Buffalo," (Technicolor) with Nancy Guild, Dan Dailey, Charles Winninger, Fay Bainter, Charles Ruggles, Charles Russell, Jane Nigh, Sig Ruman.

Lee Garmes, "Nightmare Alley," with Tyrone Power, Joan Blondell, Helen

Walker, Coleen Gray, Ian Keith, Mike Mazurki, Taylor Holmes.

Arthur Miller, "Gentleman's Agreement," with Gregory Peck, Dorothy McGuire, John Garfield, Anne Revere.

Charles Clarke, "Green Grass of Wyoming," (Technicolor) with Peggy Cummins, Charles Coburn, Burl Ives, Lloyd Nolan.

Benjamin Kline, "Roses Are Red," (Sol Wurtzel Prod.) with Don Castle, Peggy Knudsen, Patricia Knight, Joe Sawyer.

Leon Shamroy, "Daisy Kenyon," with Joan Crawford, Dana Andrews, Henry Fonda, Peggy Ann Garner.

United Artists

Lucien Andriot, "Intrigue," (Star Films) with George Raft, June Havoc, Helena Carter, Dan Seymour, Marvin Miller, Tom Tully, Phillip Ahn.

James Wong Howe, "The Time of Your Life," (William Cagney Prod.) with James Cagney, William Bendix, Jean Cagney, Wayne Morris, James Barton, Gale Page.

Joseph Valentine, "Sleep My Love," (Triangle Prod.) with Claudette Colbert, Robert Cummings, Don Ameche, Rita Johnson, Keye Luke, Maria San Marco.

Mack Stengler, "Coward's Castle," (Hopalong Cassidy Prod.) with William Boyd, Andy Clyde, Rand Brooks, Mary Sawdon.

Universal-International

Frank Planer, "The Exile," (Fairbanks Company Prod.) with Douglas Fairbanks, Jr., Maria Montez, Paule Croset, Nigel Bruce, Robert Coote, Henry Daniel, William Trenk, Otto Waldis, Alla Dunn, Michele Haley, Janna DeLoss.

Russell Metty, "Ride the Pink Horse," with Robert Montgomery, Wanda Hendrix, Andrea King, Thomas Gomez, Fred Clark, Richard Gaines.

Lionel Lindon, "Tap Roots," (Technicolor) (George Marshall Prod. presented by Walter Wanger) with Van Heflin, Susan Hayward, Boris Karloff, Julie London, Ward Bond.

Milton Krasner, "Imagination," (Kanin Prod.) with Ronald Coleman, Signe Hasso, Edmond O'Brien, Ray Collins, Philip Lobe.

Warners

Ted McCord, "The Treasure of the Sierra Madre," with Humphrey Bogart, Walter Huston, Bruce Bennett, Tim Holt, Barton McLane.

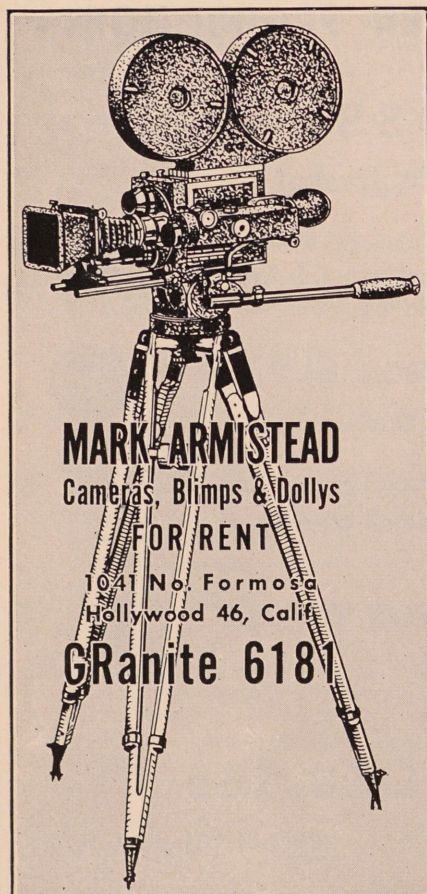
Sid Hickox, "Silver River," with Errol Flynn, Ann Sheridan, Thomas Mitchell, Barton McLane, Tom D'Andrea.

Ernest Haller, "Ever the Beginning," (United States Prod.) with Lilli Palmer, Sam Wanamaker, Akim Tamiroff, Gale Robbins, Hugo Haas, Benny Baker, Stella Adler.

Karl Freund, "Mary Hagan," with Ronald Regan, Shirley Temple, Rory Calhoun, Charles Kemper.

Carl Guthrie, "Love at First Sight," with Joyce Renolds, Robert Hutton, Cecil Kellaway, Ernest Truex.

Edwood Bredell, "Romance in High C," (Technicolor) (Michael Curtiz Prod.) with Jack Carson, Janis Paige, Oscar Levant, Daris Day, Don DeFore.



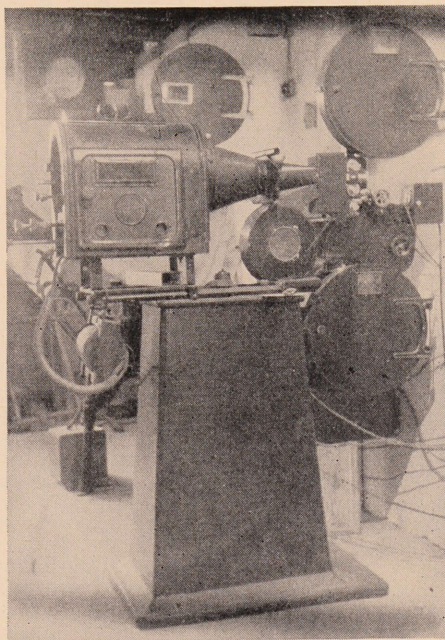
A Super 16mm Sound Projector

By Paul F. Ruckert, Brisbane, Australia

BEING a commercial projectionist as well as a 16 mm enthusiast, I was never completely satisfied with the appearance and performance of any available 16 mm sound projectors. As most commercial 16 mm sound jobs had been made for amateur use, therefore being as light and portable as possible, I decided the only way to get a projector suitable for 16 mm commercial use, was to build one to 35 mm specifications. As the projector is entirely for theatre use, size and weight was unimportant. Therefore suitable 35 mm parts were used where possible, and the finished 16 mm. projector is impressive in appearance and performance.

A Kodak E E was chosen for the film movement, as all guides sprockets rollers, and gate are already made to take sound film. The E E was virtually stripped to the film movement; the base, spool arms, motor drive, and lamp being removed.

The movement was then mounted onto an old 35 mm sound head which was bolted to a standard 35 mm solid base. A ¼ H.P. A.C. motor is used for the drive, and the motor spindle was extended to take an 8 inch fan for blower, to keep gate and film cool. A standard 35 mm high intensity arc, and lamp-house is used for projection, thus eliminating the yellow light given out by projection lamps. Two 35 mm spool boxes neatly take 1600 ft. reels of 16 mm film.



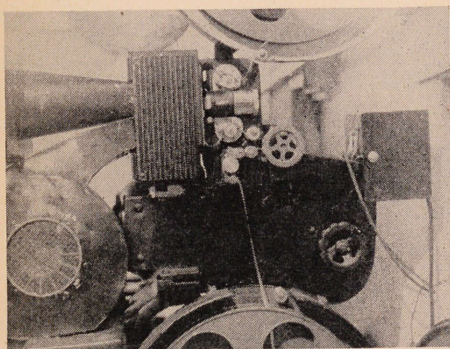
The super EE 16mm. projector built by Paul Ruckert.

A third sprocket was added for the sound head, which is built to usual 16 mm standards, consisting of a flywheel weighted drum, and a series of spring loaded rollers to eliminate "wow." The optical system is not conventional, as it uses the scanning method instead of the usual projected slit. In this method the image of the sound track is projected onto a slit in front of the photo cell.

In projection, change-overs from 35 mm to 16 mm are not noticed, as this Super-16 projector has been carefully matched to 35 mm standards.

Anso Color Film for Government Short

New Anso color film will be utilized by United Productions of America for German version of "Brotherhood of Man," being made for the Civil Affairs division, War Department, for distribution in German motion picture theatres.



Close-up, showing how blower is directed on back of gate.

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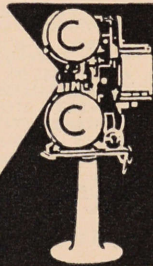
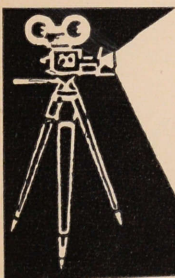
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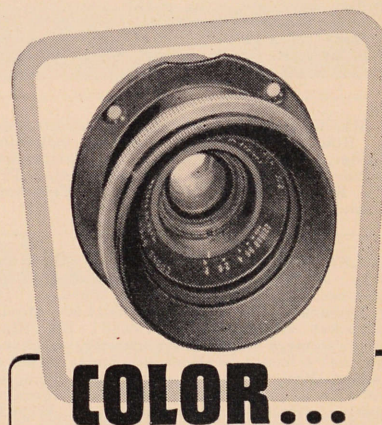
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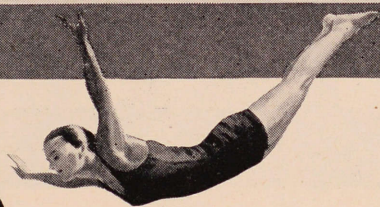
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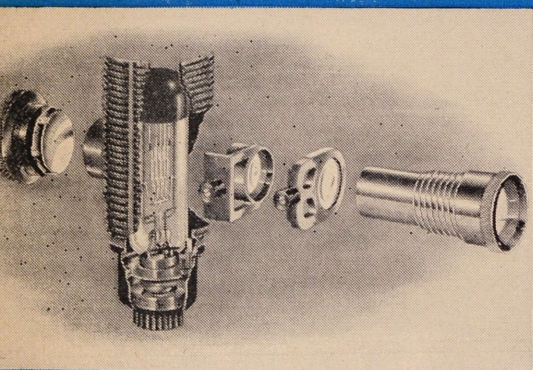
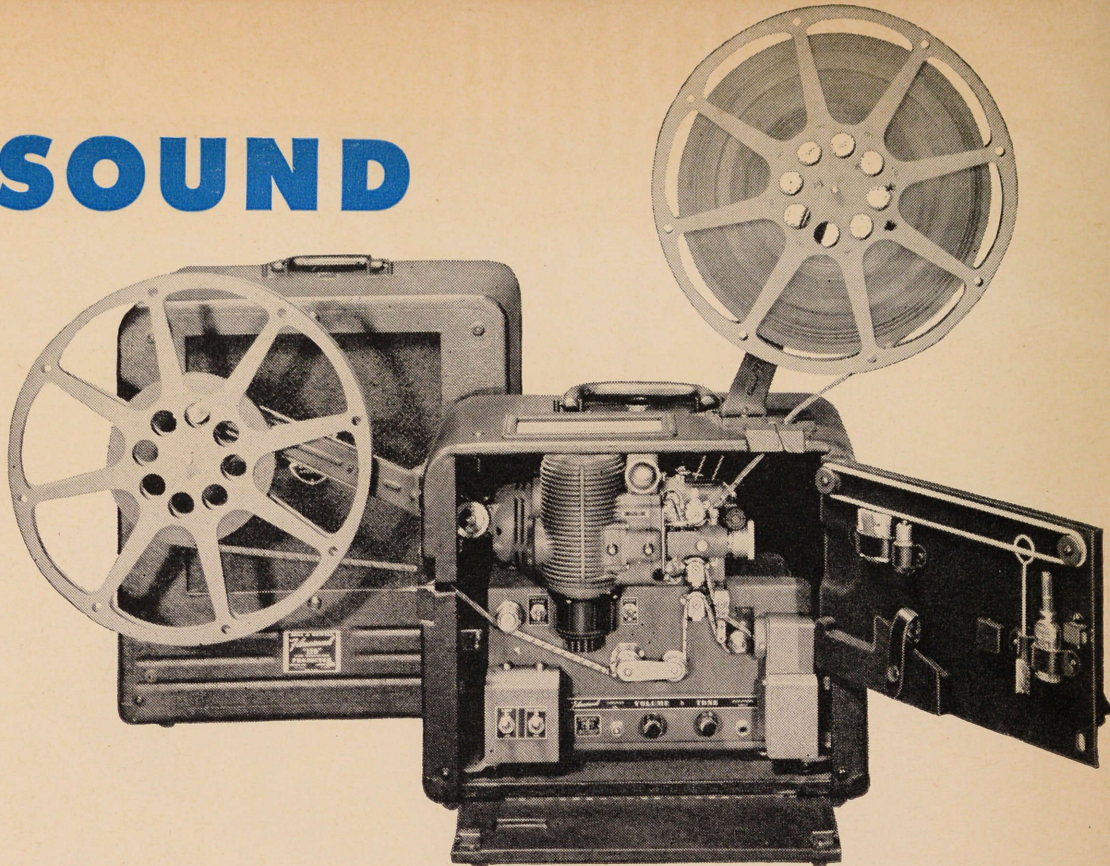
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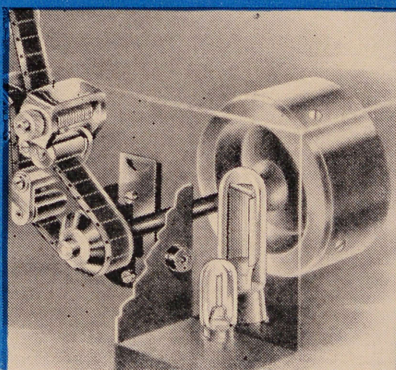
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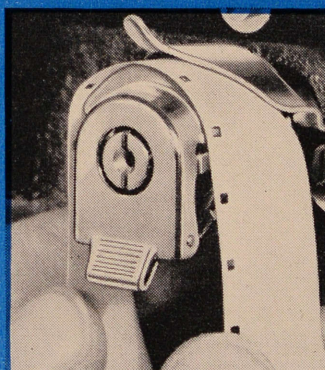
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